

Austria	DM 10	Malta	Rs 500	Portugal	Esc 80
Belarus	DR 0.850	Maldives	Rs 100	S. Africa	Rh 500
Belgium	BF 38	Japan	Yen 100	Singapore	CS 4.10
Canada	CS 30	Japan	Yen 100	Spain	Pe 110
Cyprus	CS 7.50	Kuwait	Fd 500	Sweden	Sk 50
Denmark	DK 1.50	Lebanon	LL 100	Switzerland	Fr 5.50
Egypt	EG 1.25	Malta	Rs 500	Switzerland	Fr 5.50
Finland	Fr 6	Malta	Rs 500	Sweden	Sk 50
France	Fr 8.00	Mexico	Pe 300	Switzerland	Fr 5.50
Greece	Dr 20	Morocco	Dr 6.00	Switzerland	Fr 5.50
Hong Kong	HKS 12	Myanmar	H 2.50	Switzerland	Fr 5.50
India	Rs 15	Norway	Nr 6.00	Switzerland	Fr 5.50
		Philippines	Pe 20	U.S.A.	Dr 6.50

# FINANCIAL TIMES

EUROPE'S BUSINESS NEWSPAPER

Monday April 15 1985

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World news

Business summary

## Spaniards blame Moslems for attack

Spanish authorities consider Islamic extremists the most likely culprits for a bomb explosion which killed 18 people and injured 82 at a restaurant in the outskirts of Madrid.

Interior Minister José Barrionuevo said police were treating a claim made in Beirut on behalf of Islamic Jihad (Holy War) as the "most reliable." Other hypotheses were not being discarded.

The Madrid bombing could add to evidence of links between Lebanon-based terrorists and European extremist organisations which have recently carried out attacks against NATO personnel and installations. Page 3

### Neves setback

Brazilian President-elect Tancredo Neves suffered another setback, 48 hours after his seventh operation in a month. His temperature surged and his heartbeat and breathing quickened.

### Lebanon battles

Artillery battles raged in the mountains outside Beirut between Lebanese troops and Christian militia, and Druze-led forces. Near Sidon, the fighting between Christians and Moslems, and Palestinian fighters eased. Page 2

### Sri Lanka curfew

A dusk-to-dawn curfew was imposed in the town of Akkarapura in Sri Lanka's troubled Eastern Province to quell clashes between Moslems and Tamils and guerrilla attacks on security forces. Page 3

### Albanian rebuff

New Albanian leader Ramiz Alia rejected an approach by the Soviet Union to improve relations which were severed by Albania in 1968. Page 3

### Peru elections

Peruvians voted amid tight security in general elections expected to defeat the conservative Government of President Fernando Belaúnde Terry and move the country to the left. Page 5

### Paris blast

Three bomb attacks in Paris, two aimed at Israeli and rightwing targets, did considerable damage to buildings and parked cars but caused no casualties. Page 2

### Chile clash

Chilean riot police clashed with students at the University of Chile in Santiago. Students buried petrol bombs at the police who replied with tear-gas canisters and buckshot. Page 2

### Swedish intruder

The Swedish navy fired at an unidentified intruder which could have been a submarine or a team of divers using an underwater vessel. The incident occurred near a semi-restricted area off Karlskrona. Page 19

### Kuwait amnesty

Kuwait released 332 prisoners jailed for capital offences, under a general amnesty which excluded those charged with political crimes. Page 19

### Mid-east talks

U.S. assistant Secretary of State Richard Murphy began a round of talks with Arab leaders that may signal the start of fresh U.S. involvement in Middle East peace efforts. Page 2

### Sudan Cabinet

Military and civilian representatives held talks in Khartoum on forming a new government for Sudan. The civilians apparently remained divided over the cabinet list. Page 17

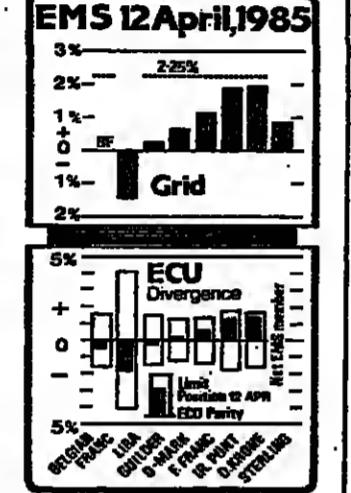
### Border fortified

Israel is building new electronic detection systems and dozens of fortifications along the Lebanese border in preparation for its troop pull out. Page 16

## Date set for CGE deal with Thomson

CGE, the French nationalised electronics group, is to take over the civil telecommunications interests of the Thomson electronics concern from July 1, 18 months earlier than originally agreed. Page 16

EUROPEAN Monetary System: Losses sustained by the U.S. dollar over the past week provoked a decline in the value of the weaker members of the EMS last week. The Italian lira reversed a firmer



THE TOUR of six Asian nations and Saudi Arabia, which Mrs Margaret Thatcher, the UK Prime Minister, has just completed, has been one of the most physically gruelling since she came to office.

In the end, even the resilient Mrs Thatcher began to show signs of failing as she flew thousands of miles across South-East Asia, often getting up at 5am or 6am to fulfil her packed programme, which left little or no time for rest.

On one crazy day, Mrs Thatcher had official engagements in three countries – Singapore, Brunei and Malaysia – dragging her weary entourage along from Commonwealth war cemeteries to sultans' palaces and presidential banquets.

Little wonder, therefore, that she referred to the country she was speaking in as Malaysia, whereas she was actually in Indonesia. Last Saturday, when addressing the Sri Lankan parliament, she had to stop in the middle of her speech when

The Government's view is that

she was afflicted by a prolonged bout of coughing and sniffles. This was the combined result, as she put it after regaining her composure, of "your climate and air conditioning system to which our throats are not accustomed."

The royal "we" used on that occasion was perhaps a slip of the tongue or a reference to husband Denis and herself. But royal was also a fitting description of the wel-

come she received in some of the capitals.

The pomp and circumstance surrounding her arrivals and attendance at ceremonial occasions, not least in a country such as Indonesia with no traditional ties with Britain, would not have been out of place for a monarch.

At Jakarta airport, she stood under a canopy with President Suharto while what looked like half the

Indonesian armed forces paraded in front of her and a 18-gun salute boomed out over the whole proceedings.

What many feared would turn out to be a succession of rather boring official occasions became an incident-packed tour. Thanks to the straight talking of the Prime Minister, Fleet Street journalists looking for stories with a domestic flavour over the "dead" Easter holiday period and Britain's Labour opposition too happy to play with impunity while the boss was away, a political ping-pong match developed between London and South-East Asia which is still continuing.

Mahathir Mohamad, the quick-witted Malaysian Prime Minister, who can always be relied on to provide a hit of fun when everything is running smoothly, started the ball rolling with a stinging attack on the Commonwealth at the welcoming banquet for Mrs Thatcher in Kuala Lumpur.

The British delegation, although

representing the founder and senior member of the Commonwealth, professed itself to be unperturbed because, untypically, Dr Mahathir had managed to say a few nice things about Britain, almost as an after-thought. By previous standards, the inventor of the "buy British last" policy was being extremely charming a British spokesman said.

Not to be outdone, the still fresh

Mrs Thatcher waded in with some carefully chosen comments about "seeing the unions off" during the miners' strike, a theme which she kept up until the end of her Singapore visit.

MR BOB ARUM, the boxing promoter, says he is not interested in making records out of tonight's big middleweight fight between black Americans "Marvellous" Marvin Hagler and Thomas Hearns, "only in making money." Yet he nevertheless seems set to do both.

In the island state, she was joined in a chorus of anti-union rhetoric by Mr Lee Kuan Yew, the veteran Singaporean Prime Minister and patron of free enterprise, whose admiration for Mrs Thatcher's rigorous economic policies knows no bounds. Because these

Continued on Page 16

## Cautionary reaction by EEC to U.S. call for monetary talks

BY MAX WILKINSON AND QUENTIN PEEL IN PALERMO

EUROPEAN COMMUNITY finance ministers, meeting informally in Palermo, reacted with extreme caution to the proposal by Mr James Baker, the U.S. Treasury Secretary, for high level talks on the world monetary situation.

At this week's gathering of world financial leaders in Washington under the auspices of the World Bank and the International Monetary Fund, the European ministers will be holding intense discussions with the U.S. Administration.

The talks will cover how they should react to further falls in the dollar and on the need for the U.S. to take further action to reduce its federal budget deficit without precipitating renewed upheaval in the foreign exchange markets.

Ministers questioned the meaning and the substance of Mr Baker's statement, and who would attend such monetary discussions. They expressed a clear preference for continuing contacts within the framework of the IMF's interim committee's "dissidence" from its "central rate" against the European Currency Unit (ECU), itself a basket of European currencies.

TOKYO: share prices were higher, with the Nikkei-Dow market average up 1421 to 12,588.01. The rise in the yen beat off oil and utilities, but investors avoided blue chip companies as fears over trade friction continued.

U.S. MONEY SUPPLY: M1 rose 5.19bn to a seasonally-adjusted \$374.7bn in the week ended April 1, 1985.

INDIA will continue to follow a highly-liberalised trade policy for the next three years following the lifting of many more restrictions on imports and exports. Page 4

PRESTWICK Holdings, the Scottish printed circuit board maker, is coming onto the market through a fixed price offer which values the company at £20m (\$24.4m). Page 22

LIVERPOOL's port is seeking another 200 voluntary redundancies among its 2,000 dockers. Page 22

BANKAMERICA, the second largest banking group, reported a 13 per cent gain in first quarter net earnings to \$134m but again noted that it continued to be plagued by higher than normal loan losses. Page 19

RELIANCE FINANCIAL Services, which is controlled by New York City investor Mr Saul Steinberg, intends to mount a proxy fight for control of Tiger International, the U.S. air services group.

SOUTH AFRICA's two leading hotel groups, Southern Sun and Holiday Inns, are to be merged to form a domestic group with 50 hotels and a virtual monopoly of the middle to upper end of the country's hotel market. Page 17

OLIVETTI chief Sig Carlo de Benedetti, who is also a financier in his own right, is joining a consortium of investors to include Pirelli, the Berlusconi television group and others to take a 24.5 per cent stake of Italy's Mondadori publishing group. Page 19

MIDLAND BANK may swap its interest in the European American Bank for a bigger stake in the European Banking Group. Page 16

The surprise move by the right-wing Likud ministers in the Labour-led coalition has provoked a

investment guarantee agency is being put forward as part of the wider debate about the future role of the IMF and its relation with the lending policies of the World Bank.

This weekend the EEC ministers

were unanimous that there should be greater co-operation between the Fund's short-term programmes for curing trade deficits and the World Bank's longer-term assistance to poorer nations.

There is still substantial disagreement among them about the exact division of responsibilities and how far the World Bank should switch its emphasis from specific aid projects to broader programmes of economic reforms.

The questions are unlikely to be resolved in Washington, and will come to a head at a special meeting of financial leaders in the G7 group of Western nations in Tokyo in June.

On that occasion, they will consider a four-part study of the world monetary system which is now nearly completed.

The weekend talks among the two of the four headings. They are:

● Increased IMF-World Bank co-operation; and

Continued on Page 16

Ed to laisser faire, Page 14

Mr Saul Cohen, who was appointed

## Bevill, Bresler trustee finds \$5bn in deals

BY PAUL TAYLOR IN NEW YORK

THE U.S. bankruptcy trustee for Bevill, Bresler & Schulman Asset Management, the small New Jersey-based government securities dealer which failed last week, has uncovered previously unknown transactions totalling about \$5bn on the company's books.

The discovery significantly increases uncertainties over the size of losses resulting from the failure of BBS Asset Management and other BBS units which have been forced into bankruptcy by the U.S. Securities and Exchange Commission.

Already the BBS collapse, the second failure of a U.S. government bond dealer in a month, has had widespread repercussions similar to those following the collapse last month of ESM government securities, a Florida-based government dealer.

Worthen Banking Corp, a small Arkansas-based banking group, said its principal banking unit may suffer losses totalling \$52m after the BBS collapse.

The weekend talks among the two of the four headings. They are:

● First LeSalis Services, a Chicago futures broker, halted operations because of potential losses by one of its affiliates as a result of its

deals with BBS.

● Other BBS clients, including a large number of U.S. savings banks, have begun raising the estimates of their potential losses.

Continued on Page 16

Wall Street review, Page 16

Continued on Page 16

## OVERSEAS NEWS

## Sudanese central bank governor dismissed

BY OUR KHARTOUM CORRESPONDENT

**BANKERS** in Sudan believe that an immediate result of the military coup earlier this month will be the dismantling of the Islamic banking system, introduced by former President Gaafar Nimeiri in 1982.

The governor of the Sudanese central bank was dismissed by the new regime last week and replaced by his deputy, Mr Mahdi el Fakhi, who is expected to announce the changes shortly.

A return to Western-style banking is likely to result in a large movement of funds out of the Islamic banks and into those international banks which decide to go back

to traditional practices, in particular the use of interest which is banned under Islamic Sharia law.

It could also encourage the return of a large quantity of expatriate funds at present invested abroad. The government news agency Sana reported last week that Sudanese communities throughout the Gulf states were setting up committees to raise funds to help the country overcome its economic difficulties.

Since Sharia law we introduced bank loans have been negotiated on a profit sharing basis. The system had the

effect of reducing bank liquidity, prompting massive transfers of hard currency to accounts abroad. Credit facilities were difficult to obtain and import licences impossible. In February this year the Government froze all foreign currency accounts in an attempt to halt these transfers.

The one bank to have benefited from shariah law has been the Fais alislamie Bank, supported in large part by the Moslem Brotherhood organisation. During the demonstrations leading up to the coup the bank was chosen as a particular target by the

crowd, and all its windows were broken.

Rumours have been rife that the Moslem Brothers had been using favourable credit facilities obtained from this bank to speculate on the market for dura, a staple food. More than 6m people estimated to be threatened by starvation in east and west Sudan are dependent on dura for their food supply.

A decision on the Islamic banking practices could give an early indication of how far the new Government is prepared to go in changing the Islamic constitution, which at present is suspended.

## Shuttle may try satellite salvage for Pentagon

By Paul Taylor in New York

**NASA** OFFICIALS were yesterday considering whether to attempt to salvage a failed communications satellite released from the shuttle Discovery's cargo bay on Saturday.

The U.S. space agency confirmed yesterday that *Leasat 3*, a 17,000-lb communications satellite built by Hughes Aircraft and leased to the Pentagon for navy communications, had failed after being deployed by Discovery.

Nasa believes a key level on top of the satellite failed to operate on launch from the cargo bay; the lever switches on the satellite's batteries, timing system and deploys its antennae rendering *Leasat 3* useless.

The latest hitch in the shuttle programme comes during increasingly tough competition for satellite launches between Nasa and ArianeSpace, the European space agency.

Yesterday, Nasa scientists were conducting water-tank simulations of the problem and considering various options, including the possibility of a space salvage mission. Shuttle astronauts last November recovered two disabled communications satellites, bringing them back to earth for refurbishment and resale.

*Discovery*, which is manned by a seven-member crew including Senator Jake Garn, is midway through a five-day flight and has already successfully launched another communications satellite.

One possibility being considered by Nasa was to extend the mission by two days, manoeuvre *Discovery* close to *Leasat 3* and swing one of the astronauts out on *Discovery*'s robot cargo arm close enough to physically flip the errant lever. Such a rescue would be highly difficult because the satellite is spinning. "It would be like trying to grab hold of a ring on a spinning carousel," said one space scientist.

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## Five die in S. African townships as Tutu condemns black violence

BY ANTHONY ROBINSON IN CAPE TOWN

AT LEAST five people died and police made dozens of arrests, as rioting, stone-throwing and petrol-bombing flared up in townships scattered across the country over the weekend.

But a large police and army cordon around the black township of Kwanonhle, near Uitenhage, in the Eastern Cape, helped to contain the main funeral of 19 blacks killed by police on the 25th anniversary of the Sharpeville massacre on March 21 took place without violence.

A crowd estimated at over 60,000 poured into Kwanonhle on Saturday for the mass funeral at which Bishop Desmond Tutu, the Anglican Archbishop of Johannesburg, and the Rev Allan Boesak, president of the World Alliance of Reformed Churches, and other black and white clergy officiated.

In his funeral address, Bishop Tutu strongly criticised the violence used by angry black crowds against the lives and properties of black councillors, policemen and officials.

Meanwhile, in the Cape Town

repeal of the 1949 Mixed Marriages Act and Section 16 of the 1957 Immorality Act, which outlaw mixed marriages and sexual relations across the colour line, is expected to be proposed by a parliamentary joint committee of the white, Asian and Coloured Houses.

The committee's findings will be announced before a joint session of the tri-cameral Parliament. The Government is expected to accept its recommendations as further evidence of its intention to repeal the more offensive aspects of apartheid legislation.

What is not clear at this stage is whether the Government will subsequently agree to further changes in key related areas of apartheid, such as the Population Registration Act and the Group Areas Act, which classify people on racial lines and dictate where they may live. Without these changes, opposition groups from all races have already said that scrapping the two acts is merely tinkering with apartheid legislation.

**U.S. starts 'exploratory' Middle East peace talks**

BY TONY WALKER IN CAIRO

MR RICHARD MURPHY, the American assistant Secretary of State, responsible for Middle East affairs, has begun a round of talks with Arab leaders that may signal the start of fresh U.S. involvement in Middle East peace efforts.

Mr Murphy met yesterday with King Hussein of Jordan and will also visit Syria, Israel, Egypt and Saudi Arabia for discussions on ways to advance the peace process.

U.S. officials described Mr Murphy's presence in the region as "exploratory." But they also hinted at the possibility of Mr George Shultz, the U.S. Secretary of State, who is due in Israel on May 10, going

on to several Arab capitals if

Mr Murphy's soundings indicate progress towards a resumption of the stalled peace process.

Washington has resisted attempts to "draw it back into the search for peace while Arab states are divided on the conditions. A stumbling block remains U.S. and Israeli insistence that they will not deal directly with the Palestine Liberation Organisation and its chairman, Mr Yasir Arafat.

The PLO has rejected an

attempt by Egypt to find a way

round the impasse by suggesting first-stage talks between the U.S. and a Jordanian-Palestinian delegation not including PLO members.

**Zaire switches economic ministers**

By Peter Blackburn in Abidjan

**ZAIRE**'s President Mobutu Sese Seko has appointed a new economic team shortly before debt rescheduling talks start with the Paris and London clubs of official and commercial creditors.

The ministers of finance, foreign trade and economy have been changed only 10 weeks after their appointment at a delicate transitional stage in Zaire's economic recovery.

Pressure is mounting for a relaxation of the austerity measures in force in the country.

The reshuffle emphasises the Government's desire to successfully implement the International Monetary Fund's 12-month recovery programme, according to an official commentary. It adds that the main objectives of the previous 12-month SDR 228m (£182.6m) IMF arrangement, which expired in March, were fulfilled.

**Battles erupt near Beirut**

**ARTILLERY** battles erupted in mountains near Beirut yesterday as Mr Rashid Karame, the Lebanese Prime Minister blamed Israel and Christian militia for clashes around the southern port city of Sidon during the past month, Reuters reports from Beirut.

The State-run Beirut radio said shells landed in residential areas far from the front lines, but there were no immediate reports of casualties as army troops and Christian militia faced Druze-led forces.

Four people were killed and 30 wounded in fighting around

Sidon yesterday, where 64 people have died and about 230 been injured, according to security sources, since clashes began on March 18.

Mr Karame said Israel and the Christian militia in revolt against Lebanese President Amin Gemayel's alignment with Syria, had ignited the Sidon trouble.

"The (March 12) revolt coincided with the despatch of Lebanese forces' fighters to Sidon and this led to the explosion of the situation there," he said.

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## OVERSEAS NEWS

# Madrid bombing linked to Islamic Jihad extremists

BY DAVID WHITE IN MADRID

SPANISH authorities believe Islamic extremists are most likely to be responsible for a bomb explosion which killed 18 people and injured 82 at a restaurant on the outskirts of Madrid on Friday night. It was the worst terrorist attack in recent Spanish history.

Those killed by falling masonry were all Spanish, although the restaurant was frequented by American servicemen and their families from the nearby U.S. Torrejon air base.

Mr Jose Barrionuevo, the Interior Minister, said yesterday that accidental causes had been ruled out and that police were treating a claim made in Beirut on behalf of the Islamic Jihad organisation as the "most reliable." Other hypotheses, however, were not being discarded.

The Beirut claim was initially received with scepticism by Spanish foreign ministry officials, but the Madrid bombing could add to evidence of links between Lebanon-based terrorists and European extremist organisations which have recently carried out attacks against Nato personnel and installations.

The Beirut statement said the attack was the second carried out recently by Islamic Jihad—presumably referring to the bombing of a Paris cinema during a Jewish film festival last month—and that attacks would continue until the last Israeli soldier left southern Lebanon. They said was a reprisal for the car bomb which killed 82 people in a predominantly Shi'ite Moslem suburb of Beirut on March 8.

Previous attacks claimed by Islamic Jihad—which Middle East experts believe may be a cover for different groups rather than an organisation in its own right—include those against U.S. and French troop quarters and against the U.S. embassy in Beirut in 1983 and 1984. Mr Barrionuevo said about

## Albania rejects Moscow condolences

By Leslie Collitt Berlin and Mark Baker in Peking

THREE BOMB attacks in Paris at the weekend, two aimed at Israeli and right-wing targets, did considerable damage to buildings and parked cars but caused no casualties, writes David Marsh in Paris.

Separate explosions on Saturday morning hit the Paris subsidiary of Israel's Bank Leumi and the French National Immigration Office. Another bomb just before dawn on Sunday wrecked the headquarters of the right-wing newspaper *Mirage*.

The anti-Israeli attack was believed to be linked to the Islamic Jihad organisation, but responsibility for all three was claimed by the French terrorist group Action Directe.

6 kg of home-made chlorate and sulphur-based explosive appeared to have been used in the restaurant attack, according to initial investigations.

The explosion took place in or near the toilets by the bar at the front of the building. About 200 customers were in the restaurant at the time, including a number of Americans. Most of the American diners had left by 10.30 pm when the bomb exploded, but 14 U.S. personnel and family members were among the injured.

The restaurant, El Descanso (the rest-break), is located about six miles from the base, near the city's civilian airport on the main highway to Barcelona. The area has been the scene of frequent demonstrations against the U.S. presence and against Spain's members of Nato.

Last December the Basque separatist organisation, ETA, claimed responsibility for damaging an oil pipeline which services U.S. military installations in Spain. This was part of a series of anti-Nato attacks in Belgium, France, West Germany, Portugal and Greece.

## Socialists start revision of rejected abortion law

BY OUR MADRID CORRESPONDENT

THE FIRST moves are under way to formulate a new law permitting abortion under certain limited circumstances on Spain. They follow Thursday's controversial rejecting by the Constitutional Court of the reform passed 18 months ago by the Socialist-dominated parliament.

As conservative Catholics celebrated their first taste of victory since the Socialists came to power in 1982, Sr Gregorio Peces-Barba, Speaker in the lower House, proposed that Congress's justice committee start work on a revised law which could get around the court's objections.

However, his forecast that a

new law could go through parliament this year was challenged by a spokesman for the right-wing Popular Alliance.

Conflicting interpretations were made of the sentence which overruled a change in the penal code removing penalties for abortions undertaken in the cases of rape, danger to the mother's life and malformation of the fetus.

Leading government figures said the judgment did not prevent the legislation of abortion in these circumstances, provided that extra guarantees were written into the law protecting the "right to life" of unborn children not strictly covered by these cases.

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# Howe sets human rights precedent

BY DAVID BUCHAN, EAST EUROPE CORRESPONDENT

SIR GEOFFREY HOWE's East European tour, which ended in Warsaw on Saturday, not only cast one of the lowest-key personalities in the Thatcher Government in new and dramatic light, but may also mark a precedent for the way visiting Western ministers handle human rights issues in the Soviet bloc.

The British Foreign Secretary spent much of his time in East Berlin, Prague and Warsaw discussing bilateral issues and arms control. Sir Geoffrey sidestepped efforts by his East European counterparts to make him criticise openly the U.S. for its Star Wars programme and pointed out in his speech which the West sees in Mr Mikhail Gorbachev's European missile freeze plan.

But, it was human rights that became the dramatic theme of the Howe tour: inevitable when a British minister once unlikely to be linked to the Islamic Jihad organisation sent by Washington was also firmly rejected by the Tirana Government.

Albania, however, apparently did not rebuff a telegram from the Chinese leadership, expressing the wish to normalise relations, severed in the mid-1970s.

This was China's first move in what is expected to be a concerted effort to rekindle ties with Albania following Mr Hoxha's death.

News of the death was received within hours by the official Chinese newspaper *Xinhua*, with details of Mr Hoxha's achievements. The Communist party newspaper, *People's Daily*, reported the event on its front page with a portrait in a black border.

Zhao Ziyang, the Chinese Premier, and Li Xianian, the President, sent a joint message of condolence to his successor, "Comrade" Ramiz Alia.

The Chinese leaders said they were "shocked to learn of the untimely passing away of Comrade Enver Hoxha."

"His death is a great loss to the Albanian people. We wish to express our profound condolences to the Albanian Government and people," they continued.

The Chinese reporting of the death and the friendly language of the message is surprising considering the vitriolic abuse which Mr Hoxha had heaped on China and its leaders since the schism between the two countries in 1977.

The Chinese have been making tentative approaches to Albania over the past two years in an effort to revive what was once one of the strongest alliances in the Socialist fraternity.

Western diplomats believe China is seizing the opportunity of the change of leadership to press harder for expanded economic and political links.

Mr Ramiz Alia is regarded as much less of a hardline Marxist than Mr Hoxha and has suggested recently that Albania, the poorest country in Europe, needs to build its failing economy by opening more to the world—China's recipe for economic success.

THE STRESS which Sir Geoffrey Howe put on human rights during his two-day visit to Warsaw has drawn private praise from Cardinal Josef Glemp, the Polish Primate, and Solidarity supporters whom the British Foreign Minister was able to meet here, writes Christopher Bobinski in Warsaw.

The authorities, meanwhile, have played down the visit in the Polish media to signal their displeasure at Sir Geoffrey's visit to the grave of Father Jerzy Popieluszko, the murdered pro-Solidarity priest.

However, Mr Stefan Olszowski, the Polish Foreign Minister, did appear on Saturday morning at Warsaw's rebuilt royal castle, to which Sir Geoffrey donated a picture. Poles, however, are still keen to improve relations with Britain because of the need to raise new government credits in the West.

Geoffrey's visit to the grave of Father Jerzy Popieluszko, the murdered pro-Solidarity priest.

reliably low-key, should have behaved precisely like his junior minister, Mr Malcolm Rifkind, last autumn in having a special meeting with senior Solidarity sympathisers and visiting the Popieluszko tomb.

Sir Geoffrey and his delegation, for their part, calculated that the East European desire for a British Foreign Secretary to visit was such that they could get away with quite a lot on human rights.

This desire will not be so great now that East Germany has had its first British foreign secretary visit ever, Czechoslovakia its first for 20 years and Poland its first since martial law.

However, Sir Geoffrey found that all three governments he visited last week were ready to discuss their internal situations and even human rights with a West European foreign minister.

This contrasts sharply with the mind-your-own-business attitude always taken by the Soviets to Western human rights complaints and, in the view of British officials, hinders well for continued dialogues between Eastern and Western Europe, despite some inevitable ructions from the Howe trip.

## Italy's trade deficit continues to worsen

By Alan Friedman in Milan

SIG BETTINO CRAXI, the Italian Prime Minister, yesterday opened the 63rd Milan Trade Fair amid news of a more-than-doubled February trade deficit. While he expressed concern about the strength of the dollar and said he hoped it would be possible to avoid a national referendum on wage indexation, the Italian Government's statistical office announced that the country's trade balance was still deteriorating.

In February, the trade deficit totalled £3.157bn (L13.157bn), up 50% compared with £1.392bn last year. This means the Italian trade deficit for the first two months of 1985, at £5.867bn, is close to one-third of the record £19.300bn deficit for the whole of last year.

The problem is that imports spurred by last year's 2.4% per cent growth in the Italian economy, are still rising much faster than exports. Energy imports, in particular, are damaging the Italian trade performance, although the country continues to do well with its exports of textiles, clothing, and engineering products.

In February, Italy's exports grew by 20.9 per cent to £11.398bn; but imports were up by 34.7 per cent for the month, to £14.455bn.

The Milan trade fair, which this year has taken technology as its theme (with exhibits ranging from robots to fibre optics systems), has attracted nearly 7,000 exhibitors, of which 1,839 are foreign. Some 70 countries are represented at the fair, which is Italy's largest annual samples exhibition.

## PM and Saudis review economic links

BY ROBERT MAUTHERN DIPLOMATIC CORRESPONDENT, RIYADH

MRS MARGARET THATCHER, the Prime Minister, yesterday had talks here with King Fahd of Saudi Arabia during the last stopover of her 11-day, 20,000-mile tour of seven countries.

Her talks with King Fahd covered mainly international issues, such as the state of the world economy, with special reference to the oil and petrochemicals market, the Middle East situation, particularly the Arab-Israeli conflict, and bilateral economic relations between Britain and Saudi Arabia.

Officials said that the Prime Minister wanted to review the two countries in the context of the new Saudi Arabian budget and the forthcoming five-year plan.

The British Government and British industry are anxious to improve their position on the Saudi Arabian market, and have been placing increasing emphasis on joint ventures.

Mrs Thatcher, before leaving for London, issued a statement saying she looked back on the tour with considerable satisfaction. "Everywhere I have gone,

I have been made very welcome indeed. I had excellent talks with leaders of each of the countries I have visited. In each case, my aim has been to deepen our economic and political relations, and I believe that this will be the outcome of my tour."

In New Delhi, she gave an undertaking to Mr Rajiv Gandhi, her Indian opposite number, that her government would do everything "in its power" to see that militant Sikhs living in Britain would not plan violent action in India.

The undertaking was as far

as Mrs Thatcher could go in answering India's demand that Britain should take steps to curb the activities of militant Sikhs living on British soil. It has always been the UK Government's position that action could only be taken if the Sikhs in question broke British law.

Mrs Thatcher assured Mr Gandhi at *tete-a-tete* talks lasting one hour on Saturday that Britain, like India, was deeply concerned by the "very serious problem" created by a small number of Sikh extremists in Britain.



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**SPERRY**

FT 15/4/85

## WORLD TRADE NEWS

## UK textile policy condemned by Hong Kong

BY ANTHONY MORETON, TEXTILES CORRESPONDENT

**CONTINUED** British import protection against clothes and textiles from low-cost countries would only marginally help the home industry, according to the Hong Kong Government. The British problem is the result of goods coming in in increasing quantities from advanced countries, it states.

In a review of the British textile industry published today Hong Kong claims Britain's trade deficit with OECD countries, largely Western Europe and the U.S., last year, was nearly twice that with its low-cost Far Eastern suppliers.

Before 1981, the deficit was the other way round, but in the last four years the position had changed radically.

"It is imports from OECD countries that are the main problem for Britain," it states.

"Three-quarters of the UK's £1.3bn deficit with the OECD was accounted for by the EEC, where the UK should be competitive by virtue of its relatively low wages, particularly in the clothing industry."

Restricting imports of clothing, in particular, from cheap suppliers led to a rise in imports from other European suppliers, countries with which the UK was not competitive.

In a strong attack on British policy towards the Multifibre Arrangement (MFA) the world

agreement that regulates a large part of trade in textiles and clothing, Hong Kong claimed it was both dishonourable and ruthless.

"It took from the less poor to give to the poor while leaving the rich untouched," the review stated. This was a reference to the policy by which newly industrialised countries such as Hong Kong, South Korea and Taiwan had to give up part of their share of the British market so that less well off countries such as Bangladesh could have a bigger share.

Reducing Hong Kong's share of the British market meant that the beneficiaries were exclusively European Community suppliers, not other, low-cost suppliers in the Far East.

Each textile or wool product sold in the U.S. must bear a conspicuous label informing customers of its country of origin, under regulations announced Friday by the Federal Trade Commission, AP reports from Washington.

The new rules, required by Congress, will take effect 30 days after they are published shortly in the Federal Register.

From then on, garments or yarn or their packages must bear labels such as "Made in U.S.A." "Made in Korea" to identify the country where the manufacturer obtained its materials.

## Rolls-Royce gas turbines for China

By Michael Donne,  
Aerospace Correspondent

ROLLS-ROYCE has won a £15m order from the China National Aerospace Technology Import and Export Corporation (Catic) for three gas-turbine electricity generating sets for an oilfield development in north-west China.

This is the second such deal in 12 months, the first being for an £8.2m generating station for a refinery in north-east China.

The latest order follows the recent British trade mission to that country, headed by Lord Young, during which Mr Dennis Jackson, Rolls-Royce's director of corporate strategy and international affairs signed a memorandum of understanding with Catic for a major growth in the company's sales to China.

The latest deal will provide the Zepu Petroleum and Chemical factory with three 12,000 kw co-generating systems, using industrial derivatives of the Spey aero-engine.

The order will be fulfilled by Rolls-Royce's Industrial and Marine Division, based at Ainsty, near Coventry.

### Glass plant order

PPG, the U.S. glass-making company, has won a contract for a £50m float glass manufacturing plant in China that will be built in collaboration with China Southern Glass, a company owned by a number of Chinese investors, Tony Dodsworth reports from New York.

## India lifts more trade restrictions

By K. K. SHARMA IN NEW DELHI

INDIA will continue to liberalise its trade for the next three years following the lifting of many more restrictions on imports and exports in a policy announced late last week that has been widely welcomed.

For the first time, the annual trade policy has been replaced by a three-year one so that businessmen can plan further ahead with the assurance that policy will not change every year.

Liberalisation of India's trade policy, particularly on imports, began about six years ago and restrictions have been progressively eased. The main changes in this year's policy are to put more items on the "open general licence" (for which im-

port licences are given for the asking).

Mr V. P. Singh, Minister of Finance and Commerce, who presented the policy to parliament last Friday, said it sought to provide a "stable policy

exchange reserves are rising because of high earnings from invisibles, notably remittances from Indians living and working abroad. The reserves are at the relatively comfortable level of \$5.5bn, worth roughly five months' imports.

The policy introduces a number of innovative changes to make imports and exports easier for increased industrial production and to strengthen the export base. This includes the launching of "the import-export pass book scheme" for manufacturer-exporters to provide duty-free access to imported inputs for export production.

Other parts of the policy provide for the "decolonisation" of the economy, that is, withdrawal of com-

pulsory imports by government-owned companies of 53 items, although steel will continue to be imported by the public sector Metals and Minerals Trading Corporation.

Under the policy, 201 items of industrial machinery have been included in the list of capital goods for import under the "open general licence" to help meet modernisation and export promotion.

The main sectors to benefit from this are automobiles, oilfield services, leather, electronics, jute manufacturers and canning.

The procedure for allowing imports of capital goods on global tender basis in respect of some key industries continues unchanged.

## Daewoo in \$337m deal with Libya

By Steven B. Butler in Seoul

DAEWOO Corporation has signed a \$337m (£268m) construction contract for utilities at the Uruba area of Benghazi, Libya.

The contract brings to \$430m the total of new contracts that Daewoo has signed in Libya this year alone. Daewoo has said that it was unaffected by the recent cancellation of many contracts by the Libyan Government, although a company official did say the Bengazi contract had been scaled back.

The contract calls for Daewoo to construct sewerage and water supply facilities, roads and street lighting, and to install electrical cable, telephones and an exchange facility, and a pumping station. The work would start immediately and is scheduled for completion by April 1990.

According to the Overseas Construction Association of Korea, in the first quarter of the year, Korean construction companies signed a total of \$1.1bn of new overseas construction contracts, an increase of 35 per cent over the same period of 1984.

### Italians win contract

ITALIMPIANTI, the Genoa-based plant engineering company which is part of the Irinfiner state holding group, has won a £200m (£15m) contract to build a new system for the transport of materials at Egypt's El Tabbin steel plant. Alan Friedman reports from Milan.

## Shippers concerned EEC rules favour shipping lines

By ANDREW FISHER, SHIPPING CORRESPONDENT

THE British Shippers' Council, representing cargo exporters and importers, is worried that new draft EEC maritime transport rules lean too far towards the protection of European shipping lines and take too little account of shippers' needs.

It has told the UK Government of its fears that the proposed EEC regulations "will be seen as unduly protectionist of the Community fleet, even to the detriment of Community industry."

But the BSC welcomed the fact that the proposed EEC maritime competition regulation had been revised so as to stress the need for competition among companies in liner (segregated cargo service) shipping.

The EEC Commission set out its shipping policy proposals in a report including new measures "required to promote the Community's trading and shipping interests." Since 1975, the amount of world merchant tonnage under EEC member flags has fallen from 29 to around 23 per cent.

The EEC proposes to apply the provision of the Treaty of Rome to shipping. But the conference system would be given a broad exemption, because of its accepted role in liner markets. About 80 per cent of UK shippers' seaborne trade is

### SHIPPING REPORT

## Dry cargo rates improve in the Atlantic market

By OUR SHIPPING CORRESPONDENT

SHIPPING markets were fairly lively last week, despite there being only four days of trading as a result of Easter. Dry cargo rates continued to improve in the Atlantic, while the small- and medium-sized ships which kept up activity on the tanker market.

Galbraith's, the London shipbroker, reported that new earnings were emerging through the Pacific container market, little from business. The iron ore market strengthened, with Wednesday seeing the largest volume of new business in a single day that has been experienced for several months.

In the oil shipping sector, VLCC (very large crude carrier) movements from the Gulf were again limited. The only reported such fixture was the World Emirate for a 240,000 ton cargo to Taiwan at Worldwide 24, similar to previous levels.

Despite rumours of some traders looking for vessels from Iran's Kharg Island terminal, made risky by the continued

Iran-Iraq hostilities, no details of any business emerged.

There was more activity in medium-sized tankers from the Gulf. Galbraith's said it fixed an 88,000 ton cargo for a big UK oil group from the Gulf to Noumea on the Pacific island of New Caledonia and Australia at Worldwide 50, while an 80,000 ton cargo of fuel oil was fixed from Kuwait to Italy at Worldwide 70.

The most active oil loading area was the Mediterranean. But with plenty of ships around to take on oil rates showed no significant movement. Ships of 80,000 tons had to take low levels of scarcely above Worldwide 60 for cross-Mediterranean trips.

Texaco needed to pay only Worldwide 30 for 122,000 tons of crude oil from the West Mediterranean to the East Coast of the U.S. There was also a fair amount of activity from West Africa. In the Caribbean, there was plenty of business, but rates were again static because of the number of ships available.

## World Economic Indicators

RETAIL PRICES

(1980 = 100)

% change over previous

	Feb. '85	Jan. '85	Dec. '84	Feb. '84	year
W. Germany	120.5	120.0	119.3	117.8	2.3
France	154.7	153.9	153.1	145.4	6.4
Italy	184.7	182.7	180.9	169.4	9.0
Netherlands	121.0	120.6	120.9	118.3	2.3
Belgium	138.7	137.2	136.4	131.6	5.3
UK	137.5	136.4	125.9	130.5	5.4
U.S.	128.6	128.1	127.8	124.2	3.5
Japan	113.0	113.8	113.2	111.3	1.5

Source: Eurostat

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## BUSINESS LAW

## State regulation of anti-trust law prevails in U.S.

BY A. H. HERMANN, LEGAL CORRESPONDENT

THE SWEET sound of reason heard recently from several U.S. courts dealing with issues of the extra-territorial application of anti-trust laws and reported in this column on March 14, 1985, was mightily reinforced a fortnight later by the highest authority, the Supreme Court of the U.S.

The court dealt\* with the constantly reappearing question, whether a state policy or direction can provide immunity to a private company accused of price-fixing or another conspiracy prohibited by the Sherman Act. The court abandoned the settled view, highlighted by a long series of leading cases, that a private party is not entitled to state-action immunity unless the state compelled it to act in violation of the federal anti-trust law.

From now on, to use the words of the dissenting Justice Stevens, "a state may exempt price-fixing from the federal anti-trust laws if it clearly articulates its intention to supplant competition with regulation in the relevant market and if it actively supervises the unlawful conduct by evaluating the reasonableness of the prices charged".

The majority justified this reversal of law by saying that it is more consistent with the principle of federalism, and that it also better serves the objectives of anti-trust laws because to recognise as defence only such acts of state which compel the party to act anti-competitively means to invite the states to make mandatory rules when otherwise they might be satisfied to issue non-compulsory guidelines.

Reading this decision in London, one immediately thinks of the Laker litigation which now seems to be approaching settlement. The Supreme Court's decision concerns price fixing by "rate bureaux" of motor carriers operating in four states of the U.S. under the supervision and with the approval of the Public Service Commission in each state.

The collective rate-making by these bureaux is authorised but not compelled by the respective states. Common carriers are required to submit proposed rates to the appropriate Public Service Commission for approval, and the rate becomes effective if this state agency takes no action within a specified period of time. If a hearing is scheduled, however, a rate will become effective only after agency approval. The State Public Service Commission thus has, and can exercise ultimate authority and control over all intrastate rates in a manner not altogether different from that exercised by the UK and U.S. aviation authorities over private agreements between airlines.

The act of state which the Supreme Court considered here was therefore the act of a state within the Union, providing

immunity against federal anti-trust laws. In Laker, as in other extra-territorial cases, the acts of state at issue are those of foreign states.

Never the less, the doctrine which the U.S. courts apply to extra-territorial issues was originally developed when courts dealt with domestic issues of the sea which were referred to the Supreme Court in the present case. Any decision of the Supreme Court which modified the act of state doctrine in a domestic dispute can be therefore expected to influence decisions dealing with acts of a foreign state.

The Laker litigation has several strands. British Airways and the other companies sued with them would not be helped by the present Supreme Court decision in respect of allegations that they conspired to frustrate a financial rescue of Laker Airways. It is also not entirely clear whether the present decision would provide complete immunity, for example against an acquisition of predatory pricing designed to annihilate a competitor. As the Supreme Court requires that there is not only an approval of price fixing but also an active supervision and evaluation of reasonableness of the prices, the state could argue that the decision does not provide protection for any sort of price fixing and particularly not for such price fixing which is predatory, coercive or discriminatory.<sup>†</sup> There seems to be, however, little doubt that the present decision should greatly help EA and British Caledonian to defend the class actions brought on behalf of U.S. air passengers.

Although it would be daring to assume an automatic immunity for predatory pricing in general, in the particular case of Laker the new decision might help the defence by bringing the issue under the umbrella of the required state supervision.

Laker's complaint that the new air fares of its competitors were predatory was first made before the tariffs were approved. It was considered and rejected both by the UK authorities and by the Civil Aviation Authority in the U.S. Indeed, the U.S. authorities, which could review and disapprove of the fares, not only did not do so but pressed for British approval. These decisions were not challenged by Laker in courts either in the UK or in the U.S. at the time. It is questionable whether, in view of the latest Supreme Court decision, the U.S. courts can go any further than to consider whether there was an "active supervision" or the anti-competitive conduct and evaluation of the "reasonableness of the prices charged" and substitute their own decision as to reasonableness, etc, for that made by the state authorities.

That much for the possible wider implications of the

\* In *Southern Motor Carriers Rate Conference, Inc. et al. v. United States*, No. 82-1522, decided March 27 1985.  
† U.S. v. Baltimore and Ohio Railroad, 1984, 530 F.2d 100, 156 F. Supp. 2d, Case No. 154,922 (D.D.C. April 15 1982).  
§ California Retail Liquor Dealers Association v. Midcal Aluminum Inc., 445 U.S. 97 (1980).

## WEST GERMAN NUCLEAR INDUSTRY

John Davies reviews Bonn's long-term options for disposing of spent fuel

## W. Germany digs into its nuclear waste pile

WEST GERMANY, which has built up a major network of nuclear power stations despite violent opposition, is pressing ahead with plans to deal with the growing volume of nuclear waste.

Nuclear experts are pursuing a long-term strategy of making the country more independent in its ability to get rid of radioactive spent nuclear fuel—both through reprocessing for future use and through permanent storage.

At present, most of West Germany's nuclear fuel reprocessing is carried out by the French at their plant at La Hague near Cherbourg, while smaller amounts have been treated in the UK and at the experimental reprocessing plant at Karlsruhe in southern Germany.

The two rate bureaux were charged in November 1984 of violation of the Sherman Act. Their defence was that their conduct was exempt from the federal antitrust laws by virtue of the act of state doctrine as defined by the Supreme Court in *Parker v. Brown*.<sup>†</sup> On that occasion the Supreme Court held that the Sherman Act was not intended to prohibit states from enacting laws which permit but do not prohibit anticompetitive conduct by regulated private parties.

The accused rate bureaux argued, therefore, that the rates were ultimately determined by the appropriate state agencies. The District Court found this argument without merit in summary judgment in favour of the Government and was confirmed by the Court of Appeals for the Fifth Circuit sitting en banc, the majority of which held that the conduct was not entitled to Parker immunity because it was not compelled but only approved by the state.

The Supreme Court did not reverse its Parker decision but said it should be understood differently. It held that the federal antitrust laws do not forbid the states to adopt policies that permit but do not compel anticompetitive conduct by regulated private parties.

There were only two conditions expressed by the Supreme Court earlier. First, the challenged restraint of competition must be "clearly articulated and affirmatively expressed as state policy" and, second, "the state must supervise actively any private anticompetitive conduct."

When other evidence conclusively shows that a state intends to adopt a permissive policy, the absence of compulsion should not prove fatal to a claim of Parker immunity, concluded the court. This opinion was written by Justice Powell on behalf of the majority, found no favour with the dissenting Justices Stevens and White. But it will probably be welcomed by foreign trading partners of the United States.

\* In *Southern Motor Carriers Rate Conference, Inc. et al. v. United States*, No. 82-1522, decided March 27 1985.  
† U.S. v. Baltimore and Ohio Railroad, 1984, 530 F.2d 100, 156 F. Supp. 2d, Case No. 154,922 (D.D.C. April 15 1982).  
§ California Retail Liquor Dealers Association v. Midcal Aluminum Inc., 445 U.S. 97 (1980).

## SHARE OF ELECTRICITY GENERATED BY NUCLEAR POWER

	1984	1983
France	59	58
Belgium	51	46
West Germany	23	18
Netherlands	17	17
Britain	6	6
Italy	4	3
Total EEC	27	23
Source: Association of West German Electricity Undertaking (VDEW).		

billion.

"There is a consensus that it would be unwise just to dispose of used fuel. But it would also be unwise to close this option completely," one expert said. "There is general agreement that there will always be certain fuel that may not be ideal for reprocessing and recycling. So the long-term strategy is to have a mix of reprocessing in Germany and abroad, as well as disposal."

The West Germans are reluctant to predict their long-term use of the French reprocessing plant at La Hague.

Although La Hague is being expanded, the French do not

think they expect to need all of its capacity themselves by about the turn of the century.

The West Germans take this claim seriously but at the same time they are apt to see the French as keen bargainers, out to secure long-term contracts.

In addition to existing arrangements for reprocessing in France and the UK, some West German nuclear experts point to the faint possibility of direct storage in the frozen north of Canada.

"Investigations are currently being made into the feasibility of permanent burial in nuclear waste in the salt caverns at Gorleben. Other sites being examined, also in Lower Saxony, are the disused Konrad iron ore mine near Salzgitter and the Asse salt mine near Wolfen-

burg.

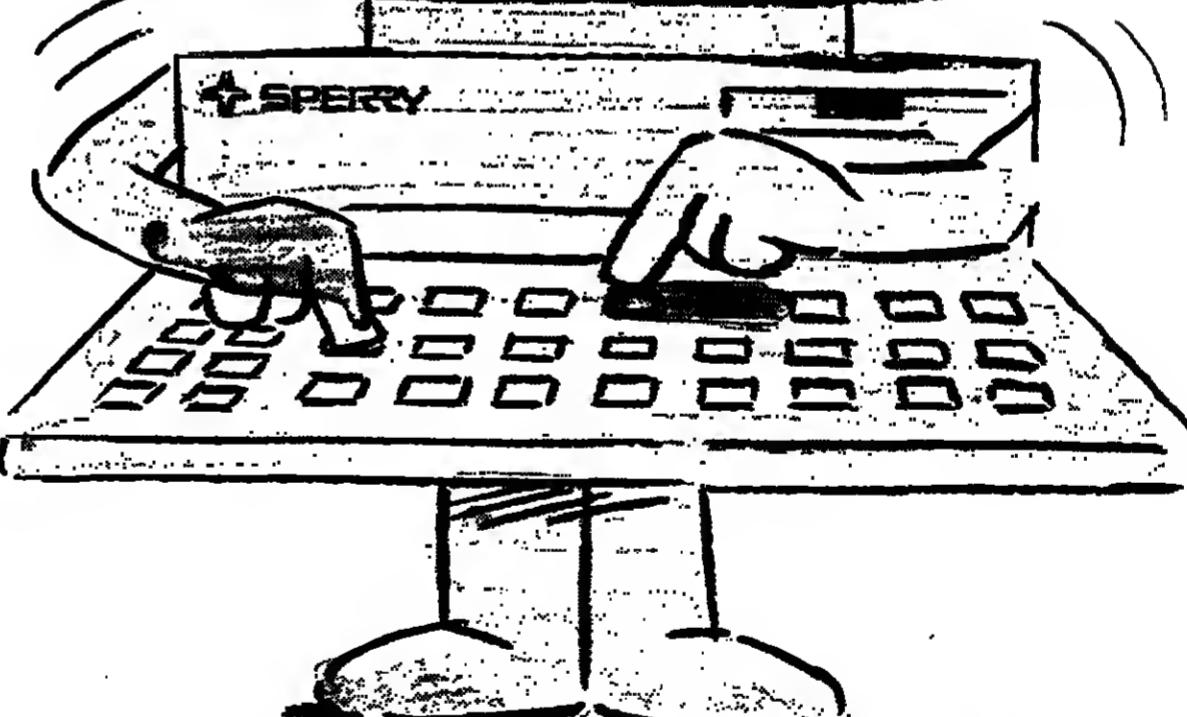
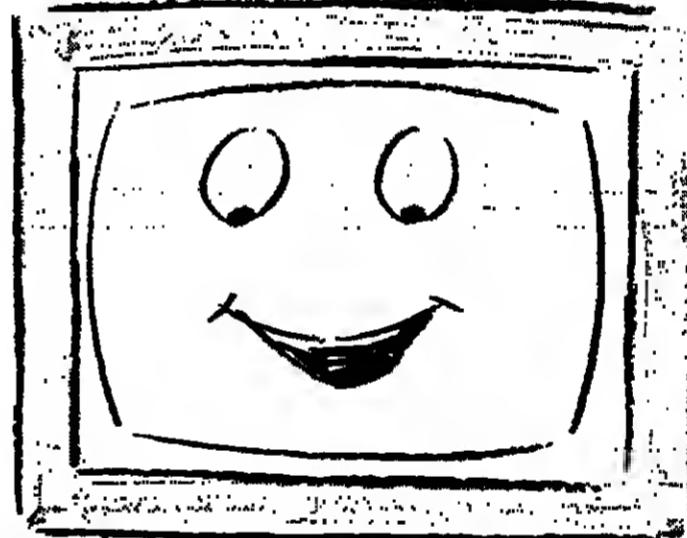
Nuclear experts point out that the Russians offered to allow Austria to send nuclear waste there.

"The East Germans have done this for years and it works perfectly well," one expert said. "For them, nuclear fuel disposal is no problem at all. The Soviet Union comes to pick it up."

Another option open to West Germany is that the Wackersdorf reprocessing plant could be extended to handle a greater volume of used fuel, or a second plant could be built. This would depend greatly on the development of the Wackersdorf project.

Although anti-nuclear protesters will fight the project with legal objections and demonstrations, construction work is expected to start shortly after Bavaria gives formal approval in the middle of this year. To allay opposition, the contractors are expected to give preference to local workers and companies, but even so the huge project is bound to raise the temperature of debate in the region by more than a few degrees.

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## UK NEWS

## Government may sell off assets of munitions group

BY LYNTON McLAIN

ROYAL ORDNANCE, the 400-year-old state arms and munitions company, might be privatised by summer 1986 through a government sale of individual assets and subsidiaries.

That would mark the break-up of the group long feared by 20,000 munitions workers and by opposition Labour Party MPs.

The option of selling individual factories or subsidiary divisions is stated in an agreed memorandum of understanding signed by Mr Michael Heseltine, Defence Secretary, and Mr Fred Clarke, chairman of Royal Ordnance.

The possibility of a break-up remains despite the publicly stated intention of the Government that Royal Ordnance should move into the private sector through a public offer for sale of shares in the company as a whole.

That is how British Telecom was privatised last year and how British Aerospace is to be privatised fully next month.

"It is the intention and objective of the Secretary of State (for defence) that the company shall pass into the private sector as soon as commercially and financially appropriate having regard to the business needs of the company," the memorandum says.

The method to achieve that objective "will be kept under review" by

the Secretary of State, but "sales of assets or subsidiaries to third parties are not excluded," the memorandum adds.

The Ministry of Defence confirmed that the "disposal of parts of Royal Ordnance is a possibility. It has always been a possibility that parts could be sold separately, although the preferred course is a flotation of the company."

The affirmation by Mr Heseltine and the Royal Ordnance chairman of that possibility is likely to re-awaken fears already voiced in parliament.

There was fierce controversy over the possible break-up of Royal Ordnance when the Government's privatisation bill went through parliament last year. The House of Lords voted in July to force the Government to sell the 11 Royal Ordnance factories and two research establishments as a single entity.

Mr Geoffrey Pattie, then Defence Procurement Minister, said the Government would not accept the House of Lords' defeat.

In October, just days before the Ordnance Factories and Military Services Bill became law, the Government accepted the Lords' amendment. Mr Adam Butler, Minister for Defence Procurement, acknowledged that "the Government have had what might appear to be a change of heart."

## Control of Systime changes

BY JASON CRISP

SYSTIME, the Leeds-based mini-computer group, has been taken over by Control Data Corporation, the U.S. group which bought a 43 per cent stake in the company two years ago.

CDC has paid 60p a share to shareholders, taking its stake up to 92.4 per cent at a total cost of about £20m. CDC hopes to buy the remaining shares in Systime from West Germany, Louis Kehoe writes from San Francisco.

The company said changes in UK regional development policy had been partly responsible for the decision to develop at Brunswick, lower Saxony, in preference to Cwmbran, Gwent.

The new factory will occupy 70,000 square feet on a 25-acre site

After a meteoric growth, Systime has faced a number of problems including substantial losses in recent years. Recent attempts to raise money through a rights issue failed when the shareholders could not agree on terms.

• LSI Logic, the U.S. semi-custom silicon chip maker, has confirmed that a 250m plant destined for Wales will now be built in West Germany. Louis Kehoe writes from San Francisco.

The company said changes in UK regional development policy had been partly responsible for the decision to develop at Brunswick, lower Saxony, in preference to Cwmbran, Gwent.

The new factory will occupy 70,000 square feet on a 25-acre site

## National Savings meets target

By George Graham

NATIONAL SAVINGS, Britain's state saving organisation, has met the target set for it by the British Government by contributing a total of £3.1bn to the funding of the UK public sector borrowing requirement in the financial year 1984-85.

Healthy receipts from fixed interest certificates and from income bonds helped National Savings to take in £535m from investors in March, while withdrawals totalled £415m. With accrued interest adding £170m, the net contribution to funding in March reached £200m, above average for the year.

The target of £3bn remains the same this financial year, but the proportion supplied by interest accruing on existing deposits is growing and is likely to exceed two thirds this year.

The funds administered by National Savings grew to £28.8bn by the end of March, 12 per cent more than a year before, and interest payments are running at about £170m a month.

In addition, National Savings will benefit this financial year from the introduction of composite rate tax on bank accounts. CRT, which cannot be reclaimed by the non-taxpayer was previously levied only on building society accounts.

National Savings is now the only organisation which can offer deposit accounts which pay interest gross, and should win non-taxpaying investors such as children away from the banks.

The new 30th issue of certificates, which pays 8.85 per cent tax free, has done respectably well. Sales have totalled around £220m since its launch in February, better than for the 29th issue though not run away success of the 28th, on offer in August and September last year.

Although investors cashed in £100m of earlier certificates in March, National Savings is not satisfied with the outflow from the 19th issue of certificates. These have already begun to mature, but National Savings has twice this year raised the general extension rate. It pays on certificates whose initial term has expired, and the present rate of 9.1 per cent tax free is expected to encourage investors not to cash in their certificates.

For the first time, the document openly says that "it has to be acknowledged therefore that a number of unions are taking the view

## VOTE RIGGING CHARGES PLAQUE UK'S LARGEST LABOUR GROUP

## Union may hold new poll

BY MARK MEREDITH AND DAVID BRINDLE

MR RON TODD, general secretary-elect of Britain's largest union, the Transport and General Workers' Union (TGWU), said last night that he would support a fresh ballot for the leadership of the union if its executive council decided on one.

Breaking his silence on the growing crisis within the union over allegations of ballot-rigging at the time of his election last year, Mr Todd said he would back a fresh vote because the general secretary required the full confidence of the membership.

Mr Todd, speaking in Inverness where he is attending the Scottish TUC, declined to comment on specific claims of voting irregularities. He insisted that these were matters for the union's own machinery to investigate.

However, he did say that, in his view, any serious grievances about the conduct of last June's election would have surfaced before now. "Eleven months later, I just don't understand it, quite frankly."

In spite of the growing question mark over the ballot procedures, complainants have yet to produce concrete evidence of widespread manipulation of the voting—the evidence which Mr Evans says he must have if any action is to be taken.

Associates of Mr George Wright, the runner-up to Mr Todd in the ballot, say he will produce such evidence when he meets Mr Evans on Thursday.

## Unions urged to uphold labour law opposition

BY PHILIP BASSETT, LABOUR CORRESPONDENT

TRADE UNION leaders will be urged this week to maintain the Trades Union Congress's policy of blanket opposition to the Government's labour laws, despite strong pressure against the policy from some unions and growing evidence of contrary practice at local level.

The TUC's key employment policy committee is expected to endorse on Wednesday at a special meeting on the issue a confidential policy document prepared by TUC officials which proposes leaving unchanged the TUC's position on the law.

Even though the private paper says that the conclusion "should not be taken to denote any complacency about the operation of TUC policy in relation to the current law," it has been reached despite its own evidence of a series of difficulties relating to the law in industrial disputes. Those are serious enough to warrant the TUC's issuing fresh advice to affiliated unions on key aspects of the law.

In particular, the document recognises that injunctions obtained by employers under the Government's labour legislation—and especially the pre-strike balloting provisions of the 1984 Trade Union Act—is "the area of the law which is causing most difficulty."

For the first time, the document openly says that "it has to be acknowledged therefore that a number of unions are taking the view

## Jobs 'hang on Euro-fighter aircraft deal'

By Michael Donne, Aerospace Correspondent

URGENT DECISIONS by the Government on major future military aerospace programmes, such as the European Fighter Aircraft (EFA) and the new military transport helicopter, are needed to save thousands of aerospace jobs, according to Tass, the white-collar section of the Amalgamated Union of Engineering Workers.

Mr Chris Darke, the national aerospace organiser for Tass, says that both Westland, the helicopter manufacturer, and British Aerospace are under threat from government delays in arriving at decisions vital to their future.

Tass believes that if a full five-nation consortium with France, West Germany, Italy and Spain on the European Fighter Aircraft cannot be achieved because of French indecision on such matters as work-sharing and design leadership, the UK should opt for a smaller multi-national partnership.

This could be built around the UK, West Germany, Italy and Spain, as a four-nation venture, or around the UK, West Germany and Italy as a three-nation venture, or any other combination of nations without the French.

• Air Europe, the UK independent airline, has been awarded rights to fly scheduled services between Gatwick and Gibraltar, by the Civil Aviation Authority.

The airline plans to start on November 1, using Boeing 737 aircraft.

## Company Notices

### JUGOBANKA United Bank U.S. \$50,000,000 Floating Rate Notes 1989

NOTICE IS HEREBY GIVEN that a drawing of Notes due for redemption on 30th May 1985 will take place on 25th April 1985.

The prefix and note numbers drawn will be published at a subsequent date.

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Notice is hereby given from Tokyo that the Board of Directors has decided a payment of Dividend of Yen 100 per share for the financial period ended 31st December 1984.

Recipients of Bearer Share EDRA will receive the dividend in respect of the shares registered in the name of the shareholders.

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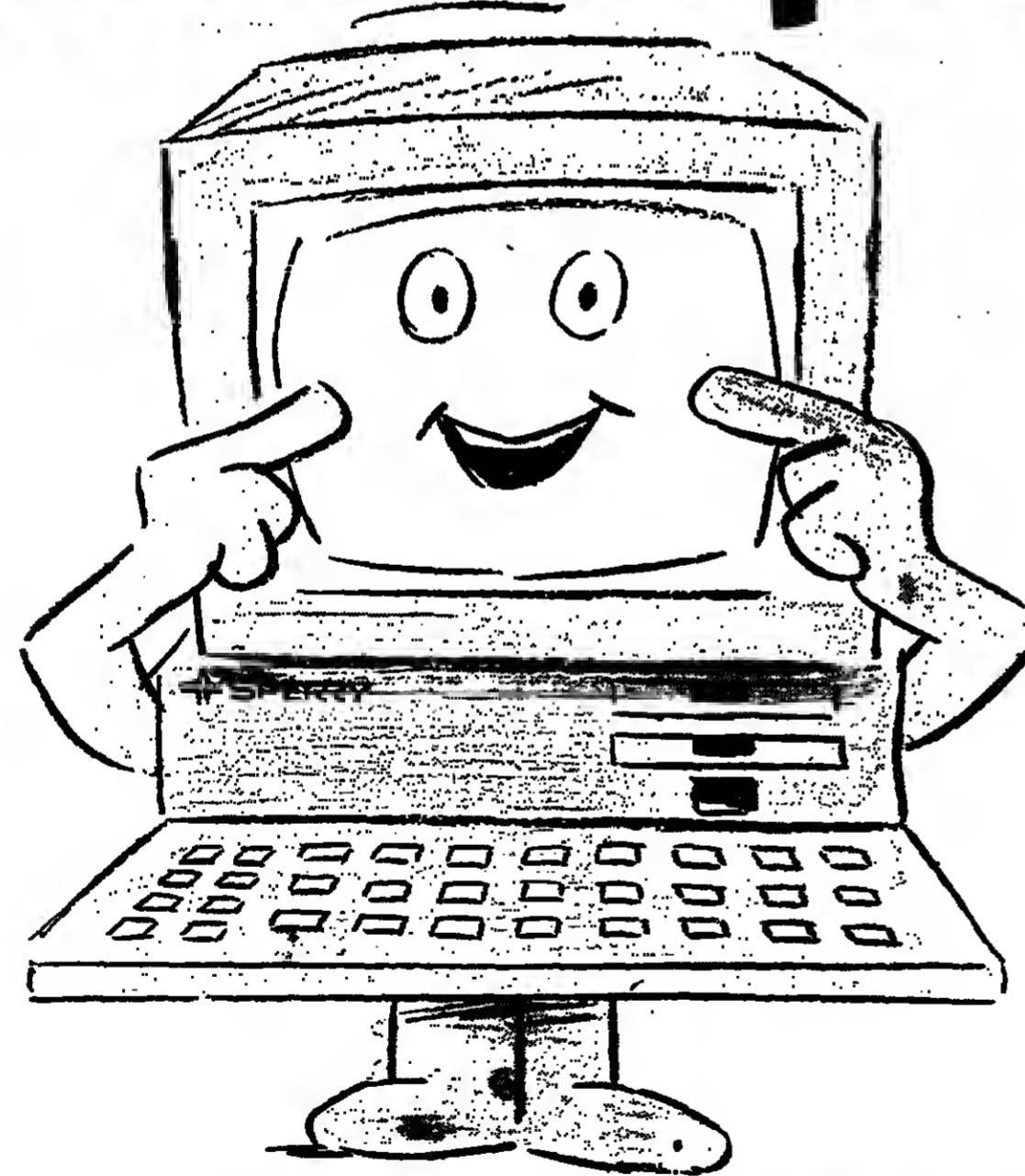
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## UK NEWS

Ian Hamilton Fazey on the findings of a survey of small companies

# Assessing the burden of red tape on business

BUREAUCRATIC "red tape" may have cost Britain about 1.26m jobs — many of them new ones — in the five years to the end of 1984, according to a survey of the small-business sector carried out for the Government's report *Burdens on Business*.

The 71-page report, published as parliament rose for the Easter recess, sets out several options for cutting red tape. It will be studied by Lord Young's enterprise unit.

The report does not quantify the effect of red tape on job losses or job creation, but some of the data for doing so are tucked away in an appendix.

Even the most optimistic interpretation of the data suggests a net loss, in the five years studied, of about 714,000 jobs because of bureaucracy. The figures are bound to be embarrassing for the Government, prompting the question of why it has only just begun seriously to tackle the issues of over-regulation and administrative burdens on business.

The survey was carried out by Research Associates, of Stone, in Staffordshire, and covered a representative sample of businesses employing between one and 200 people.

It was designed to assess attitudes towards burdens imposed by 18 main categories of regulations, such as those on value-added tax (VAT), employment protection, statutory sick pay, as-you-earn (PAYE) income tax, health and safety, national insurance and company law.

The final question was what effect the Government's requirements in those areas had had on jobs. A total of 26 per cent of the businesses reported an average of 8.5 jobs each lost or not created as a result of regulations. By contrast, 8 per cent claimed that coping with

red tape had caused them to take on an average of four people each.

Applying the results to the whole of British business, which the report omits to do, produces some startling figures.

For example, the Customs and Excise annual report for 1983 shows that there were 225,000 businesses registered for VAT with an annual turnover between £20,000 and £1m — that is, likely to be employing between one and 200 people.

If 26 per cent of them each lost or failed to take on 8.5 employees because of red tape, it comes to 1.36m jobs. Against that must be set the 8

per cent that took on four people each to deal with red tape — a gain of 1.26m jobs. The net loss of jobs

companies, which would have employed more people in ones and twos.

Lord Young is considering several options to reduce red tape. Those

include simplifying the means of calculating PAYE and national insurance contributions, raising the present VAT-registration threshold from £1,500 a year turnover to take more small businesses out of VAT, making sick pay easier to administer, reducing planning controls, and simplifying company law, building and fire regulations, health and safety requirements and consumer protection.

## The perils of reforming child benefits

IN RECENT weeks and months the parents of about 12m children in Britain have been in danger of either losing the £9.85 a week child benefit having it taxed; having it rolled up into the family income support benefit; or having it replaced with a tax allowance.

All these ideas have fallen by the wayside which does not yet mean that child benefit in its present form is secure, but it certainly looks safer than at any point since Mr Norman Fowler, Social Services Secretary, set up his benefit reviews 12 months ago.

A Cabinet committee is still arguing over how far the present myriad of inconsistent and often contradictory benefits should be streamlined and/or cut. But politics have largely ruled out radical reform of child benefit so far, the potential wrath of Tory backbenchers stirred up by middle-class constituents being more than the Prime Minister, in particular, was prepared to contemplate.

Child benefit is a universal benefit which means it is paid automatically for every child irrespective of the financial circumstances of the child's family. It is paid to the moth-

er unless there are special reasons for making the father the primary recipient and it therefore acts as a partial equaliser to the financial inequalities between men and women.

Child benefit has a virtual 100 per cent take-up rate; everybody cashes in their vouchers at the Post Office, the poor using the money as one of

er unless there are special reasons for making the father the primary recipient and it therefore acts as a partial equaliser to the financial inequalities between men and women.

Child benefit has a virtual 100 per cent take-up rate; everybody cashes in their vouchers at the Post Office, the poor using the money as one of

simply cutting it by 30 per cent. Roughly 85 per cent of families receiving child benefit pay tax and tax-free the benefit would cut £2 a week off the benefit, including a large number of low-income families. One way out of that would be to gross-up child benefit by 30 per cent to begin with.

But that all leaves the Government with the same old problem: cash payments for children are about the most effective way of tackling poverty, blanket payments are so expensive as to make large increases in these payments impossible. Ways of directing the money where it is needed so larger amounts can be given have foun-

The only moderate reform would be to pay benefit in a two-tier rate, the second additional portion going only to poorer families. But this is scarcely an improving or radical reform and the administrative complexities may not be worth the effort.

So the Prime Minister, backbenchers and some lobby groups may have jointly succeeded in ensuring that whatever happens to child benefit it will be paid for all 12m children. If that is the case the area of reform offering the largest potential gain to poor people, most of whom live in families, may have been missed.

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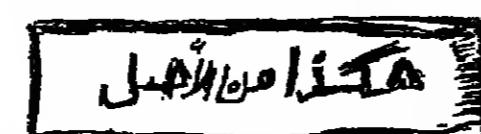
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## UK NEWS

# Union venture into banking returns profit

BY DAVID LASCELLES, BANKING CORRESPONDENT

UNITY TRUST, the trade union financial institution (it is not allowed to call itself a bank yet) has reason to celebrate its first birthday this month. It has confounded sceptics who doubted that a labour-backed venture could ever operate commercially, and last Friday it reported a modest but none the less tangible profit of £92,000 for its first eight months to end-1984.

After tax this covered two thirds of the £37,000 start-up costs, which means that the full expense of the launch could be extinguished this year. The biggest single outlay was £41,000 stamp duty, which apparently converted some trade unionists to the virtues of tax-cutting.

Mr David Bassett, the secretary-general of the General Municipal Boilermakers and Allied Trades Union, who is Unity Trust's president, describes it as "an up and running viable financial institution with clear objectives."

But the easiest part may be over. Backed by 38 unions representing 70 per cent of UK union membership, Unity got a large support in the shape of over £12m of union deposits which it merely parked in the moneymaking markets at a profit - a relatively effortless form of banking.

Not that the money comes free - or necessarily easily. Mr Terry Thomas, the executive from Co-op Bank who is helping to get Unity started, says that trade union treasurers have not placed their money as an act of charity; they were getting 11 per cent for short-term deposits last week which compared reasonably well with rates available elsewhere.

While the trade union movement as a whole has £60m in assets, pointing to scope for further deposit growth, Unity's task is to start finding a real use for its money.

## Decline in bank staff claimed

By Brian Groom, Labour Staff

NEW TECHNOLOGY is now biting into bank staff numbers, the Banking, Insurance and Finance Union (BIFU) claimed yesterday after the release of statistics by the Committee of London Clearing Banks (CLCB). The union's claim is hotly disputed by bank executives.

The figures show that although the total of part-time staff at

Barclays, National Westminster, Midland, Lloyds, Williams and Glynn, and Coutts is growing, the number of full-time staff is 3,200 below the 1980 level at 219,100.

This comes amid news of a potentially important development at Lloyds Bank, which is considering launching a pilot scheme of self-service banking at four branches in southern England this autumn. It could be later expanded nationwide.

Using Prestel keyboards and video screens, customers in lobbies or banking halls would be able to pay bills, transfer money between accounts, cancel standing orders, seek information and order bank services without the need for staff or paper transactions.

Eventually terminals could be placed in customers' homes. The English clearing banks have been slow to follow the Bank of Scotland and the Nottingham Building Society into home banking because of consumer resistance to the cost of installing equipment. But the Lloyds scheme may be a way of familiarising customers with the system.

Although back-office staff would be redeployed on marketing services, Mr David Burton, BIFU assistant secretary, said at least 5,000 jobs could be lost if the scheme went nationwide and was developed into home banking. Lloyds said disclosure of the scheme was "a bit premature" and no final decisions had been taken.

The scheme may be launched at Salisbury, Shrewsbury, and two Southampton branches, Bitterne and High Street. The union is seeking assurances that no job losses would result.

The CLCB figures show that total staff in the English clearing banks grew by 300 to 238,300 in the year to last December. But although part-time women employees were 600 up at 20,200, full-time staff fell by 300.

Mr Terry Molloy, BIFU's Deputy General Secretary, said new technology was biting earlier than expected. Bankers argue that the stagnation of staff growth has arisen from restructuring of branch networks prompted by growing competition, and that increased impact from technology - if any - would not be felt for two or three years.

Whatever the reason for this year's stagnation, the average rate of staff growth has clearly slowed from more than 3 per cent a year in the 1970s to 1-2 per cent in the 1980s, with no prospect of a return to higher levels. Unions fear falling numbers and redundancies.

BIFU is not opposed to new technology, but wants to reach agreement giving it a say in how machinery is introduced. Apart from the Co-op, most banks have refused to sign these technology agreements.

# GEC shake-up reveals failure to change strategies quickly

Ian Rodger examines the reasons for a divisional reorganisation in a leading UK company

THE REORGANISATION OF GEC's power engineering businesses last week shows that the group's much admired management rigour has not always been applied uniformly.

The group's power engineering division is made up mainly of mature manufacturing companies that have had a hard time in the past five years. Some have done well despite the difficult conditions, but others have been remarkably slow to adapt their strategies to the colder trading climate that is expected to persist indefinitely in most of these sectors.

Just to list the division's main product lines gives an idea of the difficulties. They include huge steam turbine generators for power stations, transformers and switchgear for distributing electricity from power stations to users, gas turbines for driving industrial equipment and remote power stations - mainly on oil platforms - and diesel engines for locomotives and naval and fishing boats.

The only real growth business in the division is the one called electrical projects. From a base in supplying traditional process controls to industry, it has been building up a strong position in the new automated manufacturing technologies. After some initial caution, GEC appears quite well placed in this sector, both in terms of products such as programmable logic controllers (PLCs), robots and automated guided vehicles, and systems and project management expertise.

It is one of the leading suppliers of PLCs in the UK and has recently won a first order in the North American motor industry, the stronghold of the U.S. electronics group, Allen-Bradley. The division is also managing the computer-integrated manufacturing aspect of

that was to make better products at lower cost than the competition.

The steam turbine section has spent well over £60m in the past decade on new production machinery, including high-technology laser cutting machines and sophisticated machining centres. The resulting cost savings helped it win big and profitable overseas contracts even in the early 1980s when the high value of sterling was stifling most UK exporters.

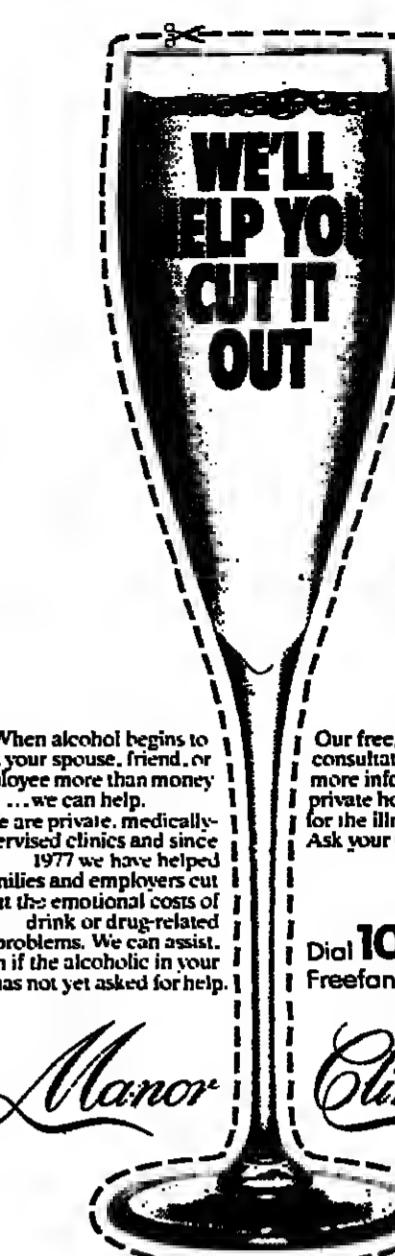
Similarly, Ruston Gas Turbines at Lincoln in eastern England has steadily improved its world market position, partly by investing about £40m in the last decade on new products and processes. In 1983, it won the MacRobert award for commercially successful engineering.

GEC's other gas turbine company, GEC Gas Turbines, was not as forward-looking as Ruston and lost ground to its competitors in the early 1980s. It was taken under Ruston's wing in 1983.

Electrical projects are now fairly large, with turnover of about £350m a year, but still accounts for less than a quarter of the turnover in the reorganised power engineering division. Among the other sections, steam turbine generators is the largest with turnover of about £500m while gas turbines and the electrical distribution section some £220m.

Two of these mature businesses, steam turbines and small gas turbines, have coped very well with the challenges of the past few years, and it is no surprise that Mr Bob Davidson and Mr Kelvin Bray, the managing directors of these two, have been given increased responsibilities.

Both recognised at an early stage that the key to survival in mature products was to increase world market share. The only way to do



When alcohol begins to cost your spouse, friend, or employee more than money... we can help.

We are private, medically-supervised clinics and since

1977 we have helped families and employers cut out the emotional costs of drink or drug-related problems. We can assist, even if the alcoholic in your life has not yet asked for help.

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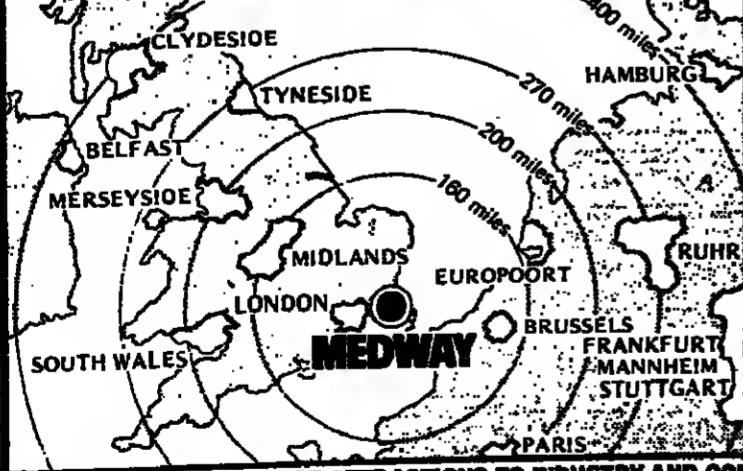
**Manor Clinics**

Subscribers who are medically insured may claim benefits within the terms of their policies.

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Hill Samuel	13 1/2%

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For further details contact: The Enterprise Office, Mounts Bay House, 25 Station Road, Chatham, Kent, ME4 4JE. Tel: 0322 222222.



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When you're rushing around the Far East on business, it's good to know there's an airline with a timetable and a network that can reduce the stress of travel to a minimum.

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*Arrive in shape  
better shape*

**CATHAY PACIFIC** 

The Swire Group 

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The versatile new Multi-User system from Pegasus Business Software ends that bruising battle for computer access. Because Multi-User's interactive power comfortably keeps pace with the business accounting needs of many departments at once.

With Multi-User, all the key areas in the company can now maintain and update their own section of the company's business accounts whenever they want to... recording key transactions as they happen... generating individual forms and reports the moment they are needed.

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Multi-User works with leading-edge micros to add a major new dimension to the features that have made best-selling Pegasus Software the friendliest, most accommodating accounting

system in the business. With a whole battery of benefits to make accounting faster, simpler and up-to-the-minute in accuracy.

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- Speeds the paperwork with up to three separate printers.
- Generates precisely the reports you require.

### Share the experience!

See the new Multi-User in action now at your local Pegasus Dealer. Simply clip the FREEPOST coupon below to find out more.

Pegasus Software Ltd, FREEPOST, Brixton House, 35/41 Montague Street, London SW1 1LW, Tel: 01-516 1616. Telex: 0536 522822. Tel: 041-297 9947 G.



To Pegasus Software Ltd, FREEPOST, Brixton House, 35/41 Montague Street, London SW1 1LW, Tel: 01-516 1616. Telex: 0536 522822. Tel: 041-297 9947 G. I would like to see Pegasus Multi-User in action. Please send me further information and tell me where I can see the system in operation.

Name:  Title:

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Our present microcomputer is  F7/54/U

We don't own a computer

No time to fill in the coupon? Just attach your business card.

**A profitable new step to peaceful coexistence**

## Contracts and Tenders

### REPUBLIQUE ALGERIENNE DEMOCRATIQUE ET POPULAIRE

(Algerian Popular Democratic Republic)

MINISTERE DE L'ENERGIE ET DES INDUSTRIES CHIMIQUES ET PETROCHIMIQUES  
(Ministry for Energy and Chemical and Petrochemical Industries)

ENTREPRISE NATIONALE DES TRAVAUX AUX PUITS  
(National Oil Exploration Company)

NOTICE OF NATIONAL AND INTERNATIONAL CALL FOR TENDERS

NUMBER 915ZAY/DIV

The National Oil Exploration Company is launching a National and International Call for Tenders for the supply of the following:

- Lot no. 1 power-driven pump sets
- Lot no. 2 Lighting equipment (posts)
- Lot no. 3 fire fighting equipment
- Lot no. 4 decanting appliances

This call for tenders is intended for Manufacturing Companies only and excludes amalgamations, representatives of companies and any other intermediaries etc. in conformity with the provisions of the Law No. 78-02 of 11 February 1978, with respect to State Monopoly on Foreign Trade. Tenderers interested in this Call for Tenders may obtain the specifications from the following address: Entreprise Nationale des Travaux aux Puits, Direction des Approvisionnements [Supplies Division], 16 Route de MEFTAH, Oued Smar, El-Harrach, Algiers, Algeria, with effect from the date on which this notice is published for the sum of 400 Algerian dinars.

Offers, of which five (05) copies should be prepared, must be sent to a double-sealed envelope, by registered mail, to the Secrétariat de la Direction Approvisionnements [Secretary Supplies Division].

The outer envelope should not bear any mark that might identify the tenderer, or any heading, and should read: "APPEL D'OFFRES NATIONAL ET INTERNATIONAL NUMERO: 915ZAY/DIV—CONFIDENTIAL A NE PAS OUVRIR." (NATIONAL AND INTERNATIONAL CALL FOR TENDERS NUMBER: 915ZAY/DIV—CONFIDENTIAL DO NOT OPEN").

Tenders must be received by 12 noon on Saturday 1 June 1985 at the latest.

Selection will be made within 180 days of the closing date of this Call for Tenders.

### SYRIAN ARAB REPUBLIC

#### NOTICE

Damascus Water Supply Authority  
Invitation for Prequalification Information  
Engineering Services  
New Water Resources Development Project  
For the City of Damascus

The Etablissement Public des Eaux de Figh (EPEF), Damascus Water Supply Authority, SYRIA is planning to investigate and evaluate new water resources for the provision of the city of Damascus with adequate supplies of water until the year 2010.

To this end, EPEF shall engage an International Consulting Firm or Joint-Venture of Firms, specialized in studies of the master plan, feasibility and detailed engineering levels.

Interested Consulting Firms having an extensive experience with similar projects, may obtain a copy of the prequalification questionnaire form by application in writing or telex to:

Etablissement Public des Eaux de Figh  
Water Resources Office  
Al-Nasser Street  
Damascus—SYRIA  
Telex: Fighdam 411312 SY

It is anticipated that the project shall be financed in part by International or Arab Funding Agencies.

The terminal date for submission of the completed questionnaire forms is 15th May 1985.

President Director General of EPEF  
Eng. M. Rida MOURTADA

### PLYMOUTH POLYTECHNIC

#### INVITATION TO TENDER

Applications are invited from companies wishing to tender for the supply of:

#### AN INTEGRATED NAVIGATION SIMULATOR

approved by the UK Department of Transport (DTP) complete with hydrographic survey workstations and a bridge visual system.

DTP approved Bridge Preparatory Course.

Companies wishing to apply should write, before 25th April 1985 to:

The Clerk to the Governors

Plymouth Polytechnic

Drake Circus

Plymouth PL4 8AA

Devon, England

#### WORLDWIDE FREIGHT AND FORWARDING SERVICES AMENDMENT

Reference is made to Kenete Sugar Company's notice of tender invitation for Worldwide Freight and Forwarding Services dated 20th April 1985.

The tenders are requested to note the following changes:

#### CLOSING DATE

Closing date for submission of tenders is hereby extended until 12.00 noon on Friday 24th April 1985.

All other requirements of the tender will remain the same.

### REPUBLIQUE ALGERIENNE DEMOCRATIQUE ET POPULAIRE

(Algerian Popular Democratic Republic)

MINISTERE DE L'ENERGIE ET DES INDUSTRIES PETROCHIMIQUES  
(Ministry for Energy and Petrochemical Industries)

ENTREPRISE NATIONALE DES TRAVAUX AUX PUITS  
(National Oil Exploration Company)

NOTICE OF NATIONAL CALL FOR TENDERS

NUMBER 1144/1/J/MEC/

The National Oil Exploration Company is launching a National and International open Call for Tenders for the supply of the following:

- Lot no. 1 spare parts for engine DEUTZ—B.A. 6M/816
- Lot no. 2 spare parts for engine DEUTZ—B.A. 12M/816

Tenderers interested in this Call for Tenders may obtain the specifications for the sum of 400.00 Algerian dinars from the following address:

Entreprise Nationale des Travaux aux Puits  
16 ROUTE DE MEFTAH, OUED-SMAR, EL-HARRACH, ALGIERS, ALGERIA

Direction des Approvisionnements [Supplies Division]—with effect from the date on which this notice is published.

Offers, of which five (05) copies should be prepared, must be sent to a double-sealed envelope, by registered mail, to the Secrétariat de la Direction Approvisionnements [Secretary Supplies Division] at the above address.

The outer envelope should not bear any mark that might identify the tenderer or any heading, and should read "Appel à la concurrence International numero 1144/1/J—confidential—A ne pas ouvrir."

[International Open Call for Tenders number 1144/1/J—confidential—Do not open].

Tenders must be received 45 days at the latest from the date on which this notice is published.

Selection will be made within 180 days of the closing date of this Call for Tender.

### Courses

#### PHAB PHYSICALLY HANDICAPPED AND ABLE BODIED

#### A UNIQUE OCCASION

at The Royal Institution of Great Britain  
21 Albemarle Street, London W1

MONDAY 13 MAY 1985 5.30 p.m.—7.30 p.m.

SIR ADRIAN SWIRE (Deputy Chairman, John Swire & Sons Limited) will deliver the third annual Sir John Kewick Memorial Lecture.

It will focus on Hong Kong and China and include personal and business observations as well as slides about the Far East—it is an opportunity not to be missed.

The event is in aid of PHAB—physically handicapped and able bodied children and adults to share the richness of life, in all its activities and experiences, on equal terms with able bodied people.

Tickets which include a Wine Reception at 5.30 p.m. cost £10 each (double ticket £16). Please apply to: John Winstle, PHAB (Kewick Lecture), Taylors House North, Tavistock Square, London WC1U 9HX. Tel: 01-388 1963.

Please supply  tickets. Cheque enclosed for £  payable to PHAB

Name

Address

Tel No.

### BUILDING CONTRACTS

#### £6m batch for Wimpey

WIMPEY GROUP has been awarded contracts totalling nearly £6m. Balfour Beatty has placed a contract worth roughly £2m for surfacing part of the Edinburgh by-pass. Woodingdean District Council has placed an £840,000 contract for improvements to houses in Weston-super-Mare. A 260-litre capac-

city water storage reservoir valued at £918,000 in Pontarddulais, Gwent, is for the Welsh Water Authority. Refurbishing and remedial works at British Telecommunications' base at Dartington Road, Northallerton, are to be undertaken under a £2.2m contract.

Scunthorpe, for United Merchant Bar. These contracts are valued at £900,000 and £800,000 respectively. Other civil engineering contracts include flood alleviation works at Rothwell, Leeds, for the Yorkshire Water Authority, an inner urban area general improvement scheme at Gipton, Leeds, for West Yorkshire County Council, and civil engineering work on a hot gas generator at King's Lynn for British Sugar. Further building contracts include a new school at Mansfield for Nottingham County Council, and the re-roofing of the B.R.S.A. Social Club at Immingham for British Railways.

### Bryant construction

New Building Refurbishment Infrastructure  
021-704 5111  
Solihull—Bracknell

### £5m tunnelling work for Rees Hough

REES HOUGH has been awarded tunnelling contracts worth £5m. These include a £2.5m contract for the installation of 4.3 km of tunnels as part of the second stage of the Margate relief sewer. The works for Thanet District Council on behalf of Southern Water Authority and includes, in addition to the 4.3 km of 1,200 mm diameter tunnel, sections incorporating a secondary 600 mm diameter pipe lining with concrete, 1,100 metres of pumping main, two small pumping stations, 28 shafts and 17 manholes. The sewer, which runs from Westgate to Birchington-on-Sea, is being installed in a one-pass proprietary lining in chalk. Rees Hough is also carrying out open cut sewer installations and headwall work as part of the contract. Other work includes the £500,000 reconstruction of the Hampton foul sewer in Sunbury Road, Kingston, mainly by open cut methods although again part of the works are being carried out in heading.

Companies in LONDON AND NORTHERN GROUP have been awarded contracts worth £1.5m. Largest in the Midlands, will refurbish 61 homes at Moran Road, Knaughton, Newcastle-under-Lyne in a £257,000 contract for the Borough of Newcastle-under-Lyne Council.

NORWEST HOLST SCOTLAND has begun work on a £1.2m contract to build an outfall sewer for Strathclyde Regional Council, Department of Sewerage. The contract is in open cut and tunnel between the village of Glenmuick and the River Kelvin of the Palace of Holyroodhouse. The work which has fractured or damaged elevations to the Lord Chancellor's Tower. It will comprise extensive stone cleaning, masonry work, new carvings to reproduce original Victorian work which has fractured or worn away, gilding of metalwork or ornate carvings and repairs to Victorian masonry. The Union Canal tunnel, for warehouse development at Fyewipe, Grimsby, for Ciba Geigy Chemicals and a merchant bar mill at Appleby Frodingham Works.

### Company Notices

#### Notice to Holders of European Depository Receipts (EDRs) in KOMATSU LTD.

EDR holders are informed that Komatsu Ltd. has sold a division to a Japanese company, Komatsu America Inc. on December 31, 1984. The Company Stock of Yen 50.00 per share, pursuant to the General Agreement the Depository Receipts, will be converted into United States Dollars.

EDR holders may now present Coupon No. 31 for payment. Payment of the dividends with a 15% withholding tax is subject to receipt by the Japanese holder of the EDRs of a tax treaty or agreement with Japan giving the benefit of the reduced rate of withholding tax. Countries currently having such arrangements are as follows:

U.S.A.	Finland	Malta
Australia	France	New Zealand
Brasil	Hungary	Sweden
Canada	Italy	United Kingdom
Denmark	Ireland	Zambia
Denmark	Poland	United States
Denmark	Rome	Zimbabwe
Denmark	Spain	
Denmark	United Kingdom	
Denmark	Yugoslavia	

Failure receipt of a valid affidavit Japan withholding tax will be deducted at 15% and will be applied to all dividends declared after July 31, 1985. Also, no dividends declared after July 31, 1985 will be deducted at 15% and will be applied to all dividends declared after July 31, 1985.

Amounts payable in respect of current dividends:

Coupon No. 31	Gross Dividend	Dividend payable
EDR	50.07194	less 15% withholding tax
	50.01765	30.012765

Dividends payable May 20th, 1985.

Dividends payable June 20th, 1985.

Dividends payable July 20th, 1985.

Dividends payable August 20th, 1985.

Dividends payable September 20th, 1985.

Dividends payable October 20

## TECHNOLOGY

## COLLABORATION LEADS TO NEW INDUSTRIAL GUIDELINES

## Blueprints for safer chemical plants

BY PETER MARSH

AN UNUSUAL collaboration between chemical companies on both sides of the Atlantic has produced a set of guidelines that should improve the safety of existing chemical plants and reduce design times for new factories.

The interest of chemical companies in the programme may be increased by their wish to avoid accidents similar to the recent disaster in Bhopal, India. In that case, a malfunctioning venting system appears to have been one of the factors contributing to the tragedy.

Channels for the safe venting of gases and liquids are an essential feature of processes to turn out by chemical reactions, a huge range of products—from champagne to cement. The vents release fluids if the pressure inside a reaction vessel exceeds an optimum value.

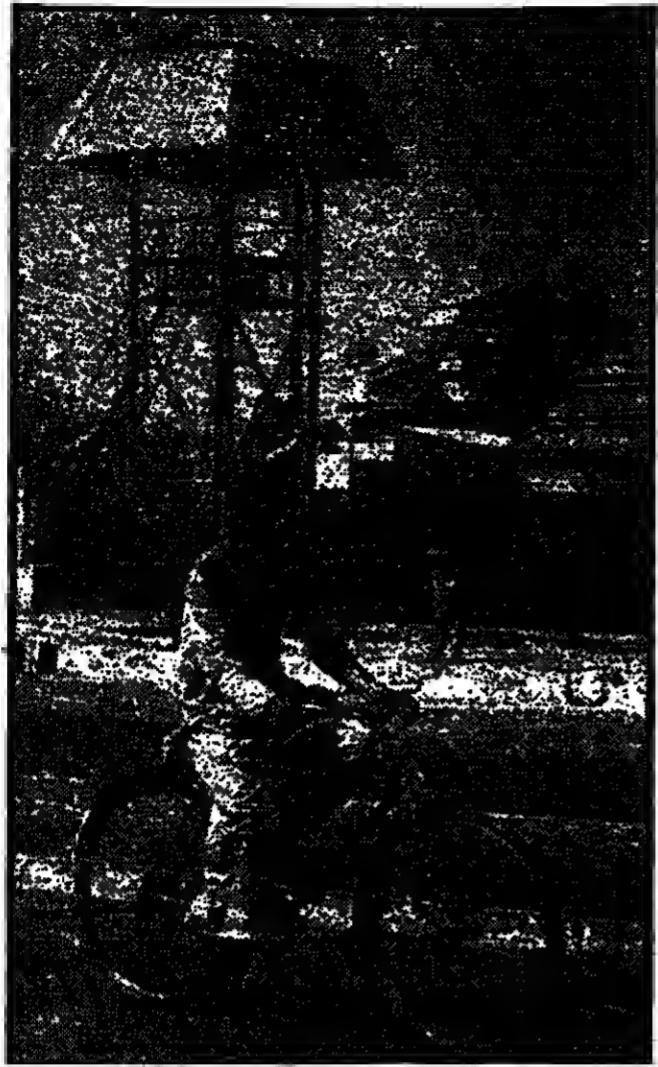
To design the correct shape of vents for "two-phase" flow—one which carries both gases and liquids—is especially difficult. The two types of fluid can interact to give a foam whose properties and behaviour are difficult to predict, as anyone who has watched a pan of milk boil over will testify.

The vents, typically a few centimetres wide, must be large enough to admit the volumes of liquids and gases that could bubble up from a reaction in an emergency. But it is against the chemical engineer's interests to make the vents too large. This not only adds to the cost of the venting system but may make its operation difficult—for instance, the large and heavy valves required for wide pipes may be more likely to stick open or shut.

A group of about 30 chemical companies started a co-operative exercise eight years ago to derive design rules for two-phase venting systems.

The \$1.6m programme, called the Design Institute for Emergency Relief Systems and conducted under the auspices of the American Institute of Chemical Engineers, is providing results with which companies can both plan new plant and check on the safety of existing factories.

Mr Harold Fisher, a Union Carbide engineer who chaired the group in charge of the programme, says that chemical companies generally have well-established design rules for vents through which liquids or gases are passed separately.



Life returns to a semblance of normality in Bhopal, India, scene of the world's worst industrial disaster last December

But for two-phase vents, the guidelines are less clear cut. Vents that have to cater for both liquids and gases may be required when, for instance, a reaction proceeds at a high temperature.

This produces gases at a high rate which may bubble up a vent pipe, propelling liquid through the opening at the same time. Such a bubbling may occur if, as a result of an accident, the pressure inside the reaction vessel suddenly drops or a cooling system breaks down.

Another type of reaction for which two-phase venting may be required involves highly viscous liquids of the consistency of washing-up fluid. Such reactions are more likely to produce foams if they go out of control.

Participants in the study included Dow, Ciba, Giegy, Du Pont, Eastman Kodak, Gulf Oil, Mobil, Monsanto, Phillips Petroleum, Shell, Sandoz, Hoffman La Roche and Conoco. British groups involved in the exercise were ICI, British Gas, the cial versions of the equipment.

Health and Safety Executive and the Insurance Technical Bureau, a research group funded by major insurance companies such as Prudential, Legal and General, Sun Alliance and Commercial Union.

These organisations underwrote the costs of the project and supplied technical data to Fauske and Associates, a company of engineering contractors in Chicago, that did much of the project work. Three sets of results followed from the exercise:

• A large body of design data that gives designers guidelines on two-phase venting systems. Such information was previously unavailable in a concise form. According to one British engineer who worked on the programme, the guidelines should cut "from days to hours" the time taken to produce the right size and shape of vent for a reaction vessel.

• A computer program intended to prescribe the type of vent for a given chemical mixture. The designer would have to feed into the program details about the type of substances in the reaction, their rate of flow through the vessel and the extremes of conditions such as temperature and pressure that the materials are likely to encounter.

The computer would also have to receive data about the size and shape of the vessel and a description of the role for the required vent, which would channel fluids either to the atmosphere or (if the materials are poisonous) to a catchment vessel. With the program, the designer would work out whether the products of the reaction are likely to foam and the characteristics of the venting system needed to accommodate them.

• A small piece of laboratory apparatus used to test venting equipment. The \$40,000 system includes a 100 millilitre receptacle which contains the chemicals to feature in a full-scale plant. (The latter might include a reaction vessel 10,000 times bigger.) With sensors such as pressure and temperature probes, an engineer can simulate what happens in a plant when a reaction occurs. A microcomputer linked to the apparatus analyses the data to indicate the kind of vents that might be required. Fauske and Associates plans to sell commercial versions of the equipment.

## DRUG DELIVERY SYSTEMS

## Diabetics helped by 'artificial glands'

BY DAVID FISHLOCK

BIOTECHNOLOGY lies at the root of two ingenious new drug delivery systems, tailored to the convenience of particular groups of patients for whom current practice can be a chore.

• **Diabetes:** One system aims to replace the need for diabetics, for whom daily—and sometimes five-times-a-day—injections of insulin are a life-saver. It is effectively a miniature pancreas, implanted in the abdomen, where it releases insulin as the patient requires it by a natural feedback process.

The "artificial pancreas" consists of a cluster of living insulin-making cells taken from a healthy animal's pancreas. These clusters, of some 5,000 cells, so-called islet cells—are sealed in capsules of plastic specifically chosen for its long-term tolerance by living tissues.

The capsule acts like a living, semi-permeable, membrane, to trigger insulin production as and when it is wanted.

But the capsule shields the "foreign" cells from the body's immune system and so prevents their rejection. Its permeability permits the insulin to leak out in response to the glucose level the cells themselves are sensing, so providing a naturally self-regulating system instead of the self-testing normally practised by a diabetic.

Behind the idea is a new company, Vivotech, set up last year at Needham Heights, Massachusetts, as a joint venture between Connaught Laboratories, the leading Canadian pharmaceutical manufacturer of insulin for the past 60-odd years, and Damon Biotech, which specialises in micro-encapsulation.

According to Dr Alison Tanton-Rigby, vice-president and general manager of Vivotech, another two years of safety testing, using primates, is planned before the technique will be ready for clinical testing in man. But tests in rats have already successfully demonstrated the principles. The pancreatic cell clusters can be kept alive and healthy by a cell-culture process until they are ready to be implanted in the diabetic.

Once in place, the pores in the semi-permeable membrane are large enough to release insulin for many months.

## Semiconductors

## IBM claims 'most dense' microchip

IBM SCIENTISTS at Yorktown Heights, New York, say they have made the world's densest integrated circuits using a focused beam of electrons to write circuit patterns directly onto the surface of silicon chips.

They claim to have shrunk circuits into an area 16 times smaller than permitted by present day technology.

The new chips have been created by a fully-sealed half-micron process compared with conventional 10-micron width made in microchip production today.

IBM says its new circuits are an important step towards chips with over 100,000 logic elements and memories with 16 bits of data.

## Vehicles

## Suspension

DJB ENGINEERING of Peterlee has introduced a oil / nitrogen suspension system on its 35 tonne payload off-highway articulated dump trucks.

Haul and load shocks are transmitted by oil from suspension cylinders and absorbed by nitrogen accumulators. A pneumatic load sensing system monitors the truck ride-height and adjusts the suspension level to compensate for the difference between loaded and unloaded conditions.

## Materials

## Diamond

SUMITOMO ELECTRIC INDUSTRIAL of Japan claims to have developed a process for the mass production of large artificial diamonds for industrial use.

The manufactured diamonds are said to be about six millimetres in diameter, almost ten times larger than those made by conventional processes, but can be sliced into smaller units.

Diamonds produced by the new process would be suitable for use in processing precision instruments such as computer disk drives and semiconductor lasers.

"100 years in quality building"



**Tom Green**  
01-346 7133-0277-354141

Security  
Hackers

THE VALUE of the U.S. market for devices to prevent hackers breaking into secure computer systems, for copying software illegally and telephone "phrases" making calls without paying will be worth \$741.1m in 1989 according to a new report from Frost and Sullivan, the New York based market research company.

Computer security is expected to account for nearly 95 per cent of all information security revenue, the report says, adding that the main market is expected to be the system for stand-alone security products. The report costs \$1,650 from New York or London.

## Software

## Lotus aid

LOTUS' 1-2-3 integrated software which combined spreadsheet, graphics and database in one package found instant success but it lacked a word processor and was not too easy to use.

Its successor, Symphony, added a word processor but was even less easy to use. Now Optionware in Stamford, Connecticut, has developed a package that makes word processing easy with 1-2-3, or so the company claims.

It costs \$99.95 and features a word processor, instant graphics generator, calendar manager, phone directory and "to do list".

## Data comms

## Weather

BETTER WEATHER forecasting is the promise of a new study in which Pectin, the computer and telecommunications arm of PA Consultants, is looking at the networking facilities required to support a system planned by the Meteorological Office to handle the data requirements of some 130 outstations until the year 2000.

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## RESIDENT ABROAD

Resident Abroad, published by Financial Times Business Information, is Britain's monthly magazine for people living or working overseas. It informs and advises on all aspects of finance and business, with articles on UK and foreign investment, property, pensions, taxation and insurance. It entertains and informs on matters of health, education, travel and leisure—all of this every month.

Tens of thousands of expatriates around the world already benefit from this magazine—ask yourself if you can afford not to join them.

For subscription details and a free copy of the latest issue contact Janice Liversidge on 01-405 6969 or telex 883694 ICLDN G

## INVESTING FOR BEGINNERS

By Daniel O'Shea

This book is based on a complete series of articles published in the Investors Chronicle under the heading "Beginners Guide to the Stockmarket". It analyses the basic principles of stockmarket investment, discusses the different categories of quoted investment, examines a wide range of related essentials such as interpretation of company accounts and gives an up-to-date review of relevant tax rules.

In short, it is a complete guide to the subject. An ideal guide for people new to the stockmarket, investing for Beginners should also prove valuable to experts who wish to refresh their ideas on basic aspects of the subject.

Published October 1984

Price: (including postage and packing) £12.50 in the UK or £15.50/US\$18 overseas. Please note payment must accompany order.

Further details available from:  
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London EC1M 6SA  
Tel: 01-251 9321  
Telex: 23700

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**TOOTAL'S PROFIT FORECAST STRETCHES MORE THAN THE IMAGINATION.**

On March 28th, the Tootal Board forecast profits for the year to 31st January 1986.

That's an eleven month prediction based on the results of just one month.

It assumed "there will be no material changes in international exchange rates."

But already this year the dollar has fluctuated between \$1.038 and \$1.233 to the £.

It assumed interest rates wouldn't change materially.

But already this year U.K. base rates have fluctuated between 9½ and 14%.

How many more assumptions will be overstretched?

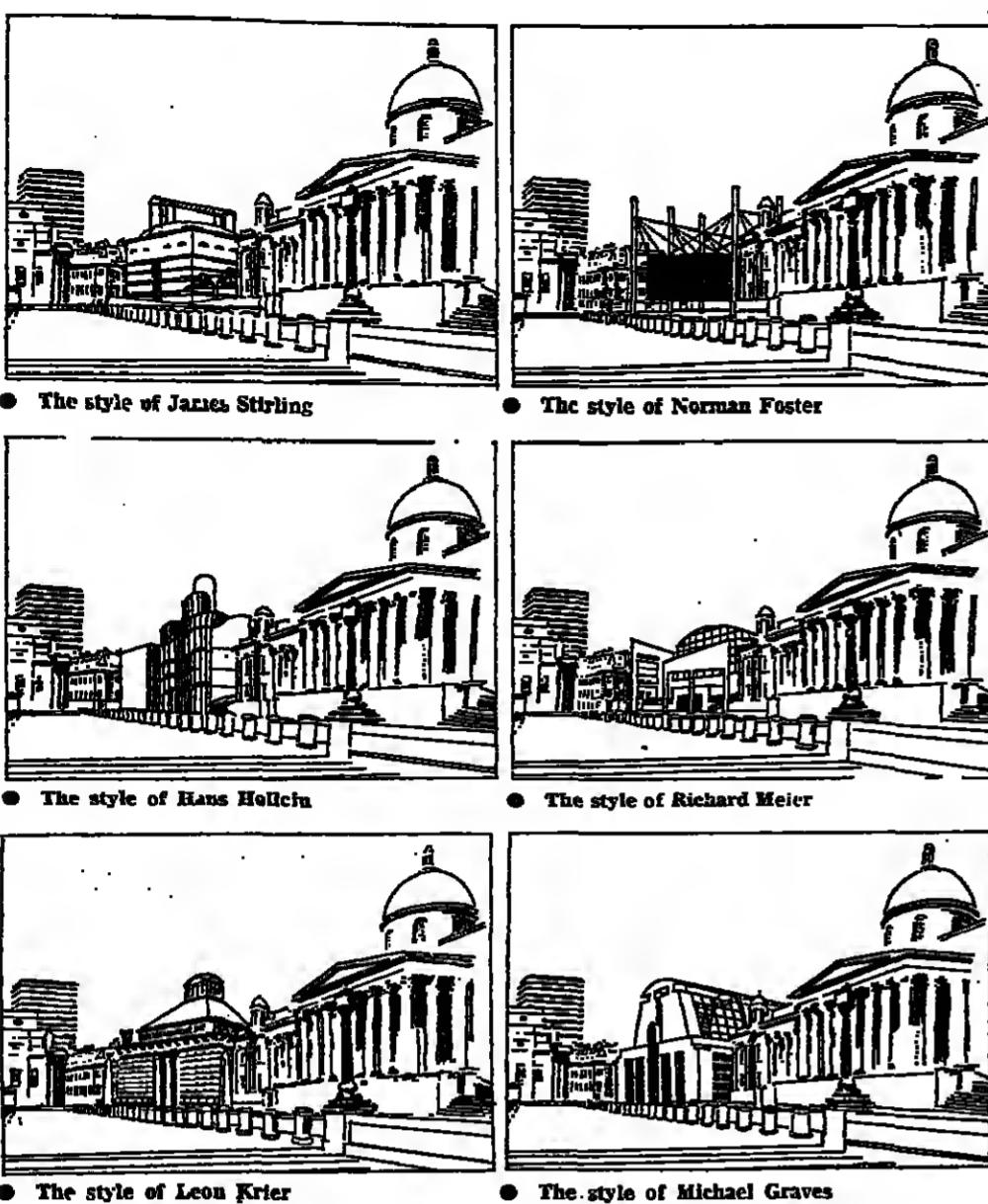
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## THE ARTS



• The style of James Stirling

• The style of Norman Foster

• The style of Hans Hollein

• The style of Richard Meier

• The style of Leon Krier

• The style of Michael Graves

## Lucia di Lammermoor/Covent Garden

## Rodney Milnes

It was hard to approach Joan Sutherland's return to Covent Garden as Donizetti's *Lucia*, the role that launched her on an international career 26 years ago, without striking some sort of pre-conceived attitude. If only in the name of self-protection, would rosy-hued nostalgia, world-worn cynicism best fit the bill? In the event, neither. Her unbelievably fresh performance rendered the safety net of nostalgia wholly dispensable, and cynicism in the face of the warmth and generosity of her singing would be simply inhuman.

Dame Joan's voice is changing with the years. Her tone is noticeably brighter than it was in the 70s—the veiled, all-purpose "aw" sound is now notable by its absence—and with this comes clarity of diction and an added awareness of what words can do: the verbal and tonal colouring in "Ardor gl'ineus" brought an even more potent frisson of Gothic horror than in the old days. This fresh interpretative resourcefulness has not been achieved at the expense of, or as a substitute for technical skill. The scales and decorative floriture purr as winsomely as ever, and the perfectly voiced arpeggios and *staccati* made even the inimitable and wholly unauthentic Mad Scene coda not merely tolerable but actually rather exciting.

In the Fountain Scene the odd high note edged very slightly off pitch, and one noticed how carefully she was bushing her breathing; her last visit to Bow Street, in *Esclarmonde*, had after all not been the happiest of occasions, and there was tension in the air. But thereafter she relaxed, every note was spot-on, and, aided by dramatic skills that have developed with the years, she enjoyed a triumph quite as remarkable and as roundly

deserved as that of 1959. To secure the equally immortal Carlo Bergonzi to partner her was a coup on the part of the management. With the first notes of "Sola tomba" he showed what, for all their other qualities, we miss in today's tenor superstars—the sheer joy of making music. Indeed, as he carries his voice through notes of mould musical pizzicato or sensuous beauty remains unpassed.

Bergonzi's acting is a

how to put it—dearling, and it would be wrong to pretend that this was a penetrating all-round performance of Donizetti's masterpiece though,

despite the fact that he has been a master of the vocal line for 20 years.

Richard Bonynge conducted very skilfully.

Michael Frayn's new translation of the Royal Exchange company aims at the directness and naturalness of Chekhov's original. How far it must share with Casper Wrede's production responsibility for a tendency to exaggeration is a nice point. One playwright's translation of another inevitably entails comment, underlining and endorsement, that comes over like a critic bringing details to our attention, perhaps at the expense of the whole picture.

A small example. When bossy Natasha is yet again boring the company with her latest baby, her brother-in-law, the ineffectual schoolmaster, used to say,

"Yes, she's a beautiful child. A good Kulyugina could pack a world of wifeliness into that sentence, in contrast with his usual simple, perfunctory and feeble" (highlighting his own children) "bitch tolerated, marriage to be brief." Masha.

According to Frayn he responds pomposly with "An admirable child, it must be said." Certainly in character, but perhaps too predictably so; moreover, here it emphasises David Ashton's grotty caricatured interpretation in a style little different from his sent-up Scottish doctor in TV's *Brass*—far too broad.

If Jonathan Miller's production a decade ago made one realise how often these people say they're tired (and threatened to send one staggering sullenly from the theatre), the main impression of Mr Wrede's direction is of the sheer unpleasantness of the production.

Christopher Bramwell's Tufsenbach provides the most complete portrait of the whole production.

Mr Bramwell's naturalness contrasts with others who fail—and the new translation is no help—to make those Chekhovian thumbnail sketches, those unsolicited self-analyses, anything more than spontaneous set-pieces. Especially noticeable in Nicholas Blame's Andrew, complete with Heathian diction.

Natasha is an almost unremarked nasty—all the more odious, like Aunt Norris in *Mansfield Park*, in being the creation of a writer who rarely condemns totally. But that is no excuse for this coarse Coronation Street parody of north-country pushfulness.

With the last scene the production comes into its own. The Exchange's echo lends an other-worldliness to those distant

designs—based on existing work—that might come from architects likely to receive such an invitation.

• James Stirling is clearly the most important British candidate. He has recently extended the Staatsgalerie in Stuttgart with total success. While he is not short of gallery work (he is at present extending the Tate in London and Liverpool), he has yet to design a major public building in his own country. He has an understanding of Neo-Classicism and a sense of history.

• Norman Foster is not unknown to the donors and there might be a feeling that a less historic approach is needed.

Foster is now working on a design that includes the use of B.C.C.

beams, steel and a classical monumental building in Nimes.

In Hong Kong, his bank tower has shown how expensive technological innovation can be; but it seems to be on the brink of a change in his style.

• Hans Hollein from Vienna has recently completed a promising art gallery in Monchen-Gladbach. He likes contrasts, and his undulating lines carve the cube with a considerable degree of elegance. He is also a gifted architect with a gift for interesting interiors and the use of rich materials.

• Richard Meier is the American who was selected after the most vigorous search to design the new Getty Centre for the Getty Museum in Los Angeles.

Today, and entirely in the spirit of helping an informed debate, we present possible

drawings by Glynn Boyd Harre

When you compare his smooth

technology with the work of an architect like Stirling, his is like

a washing machine sped up a bit recently, and the High

Museum in Atlanta has lapsed into the pastels of postmodernism.

• Leon Krier is an internationally-known voice in favour of a revival of Classicism. This Luxembourg-born architect has lived in Hong Kong and Paris, and is waiting for the right opportunity to build. His lack of experience might go against

him but he would know in

civil terms what to do in Trafalgar Square.

• Another American, Michael Graves, is a contender. His drawings often are more alluring than his buildings and we have yet to see what he can do using "real" materials.

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# FINANCIALTIMES

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Monday April 15 1985

## Farewell to laissez faire

ALL OVER the world, there are tentative signs of a sea-change in governments' thinking on economic affairs. In particular, the concept of international co-ordination of monetary, exchange rate and even fiscal policies is re-emerging gingerly from the obliquity and ridicule to which, for five years or more, it has been fashionably consigned.

Even a few months ago it would have been tempting to write off as a redundant charade the series of top-level economic meetings which began last week at the Organisation for Economic Co-operation and Development in Paris, continues at the International Monetary Fund in Washington this week and will culminate next month with the Bonn economic summit.

Today, however, such cynicism seems at most half-justified: the meetings may still prove exercises in rhetoric, in the sense that little immediate, concrete progress may come of them; but few world leaders would claim today that the effort to co-ordinate economic management internationally was in itself redundant.

### Change of heart

The most important change of heart is the one which appears to be taking place in the Reagan Administration. Friday's proposal from Mr James Baker, the new U.S. Treasury Secretary, for an international monetary conference, to be held in Washington in the summer, was on its own only a straw in the wind.

Many of the events and statements which have surrounded and preceded Mr Baker's proposal suggest that there may soon be genuine scope and desire among governments for a serious review of the way the international monetary and trading system has evolved in the 12 years since the break-up of the Bretton Woods framework. Recent speeches by Mr George Shultz, the U.S. Secretary of State, and Mr Baker himself, to say nothing of Mr Paul Volcker, the Chairman of the Federal Reserve Board, have shown a far greater awareness of international economic linkages than was ever evident in the arrogant dismissals of all foreign criticisms during the first term of the Reagan Administration.

The reasons for this newfound, if tentative, willingness to listen to outsiders are obvious enough. U.S. politicians

## A gilt-edged blueprint

SOMEWHAT DELAYED by the internal problems of the Stock Exchange Council in agreeing its membership proposals, the final version of the Bank of England's blueprint for the new gilt-edged market has now been published. The changes compared with the draft version released last November are technical rather than substantial.

By implication, the Bank has given its blessing to the Stock Exchange's plan—though of course these still have to be ratified by the members themselves. Provided there are no upsets on that score in the June voting, the gilt-edged market will remain securely within the Stock Exchange.

The need for the gilt-edged market to be confined in this way has never been entirely clear: the experience of the U.S. Treasury bond market, on which the new British system is clearly modelled, would suggest otherwise. However, at a time when there is bound to be widespread upheaval throughout London's capital markets the Bank has understandably wished to preserve institutional continuity where possible.

### Artificial separation

The same kind of motive applies to the bill market, where the Bank will continue to enforce a separation from bond trading activities.

This artificial separation has led to criticism from both sides. Prospective gilt-edged market makers have complained at the need for separate capitalisation of bill market operations, which will create organisational complications and reduce the overall return on capital through a reduction in flexibility. On the other hand, discount houses will have to join the Stock Exchange if they wish to become primary dealers in the new gilt-edged market.

But the division is not necessarily imposed for all time. The Bank's paper makes it clear in the first paragraph that the arrangements are subject to continuing review and modification in the light of experience, and the eventual merging of the bill and bond markets is a probable development once

"WE HAVE a choice with ever increasing frequency, or the painful and slow process of putting in place policies, institutions and incentives which will make more efficient use of Africa's resources, expand its abilities and reduce its vulnerabilities to external factors, including droughts."

With this stark alternative Mr A. W. Clausen, President of the World Bank, summarises the industrialised countries' response to what he has called "the worst economic crisis any region has faced since World War Two."

In the capitals of Western Europe and America, the consensus today is almost universal: Africa needs help desperately; but in the long run, aid could do more harm than good, unless African governments turn their backs resolutely on the 20 years of disastrously misguided policies which have brought them to their present sorry pass.

The indicators of Africa's economic mismanagement are unambiguous and appalling—not just in terms of mass starvation. Even before the present drought food production had been falling far behind population growth, so that the output of food per head was lower in 1982 than in 1970 in all but seven of sub-Saharan Africa's countries. Had this trend continued, Africa's inability to feed itself even without a drought, have become as tragically apparent as it is today by 1988.

Industry, too, has been reduced to chaos, despite the favouritism and protection lavished on it by post-colonial champions of modernisation and self-reliance. In more than half the African countries, manufacturing output was lower in 1980 than in 1970 and in some "extreme" cases, the World Bank report that out of 25 to 30 per cent of installed industrial ferment may be added to the pragmatic considerations which are pushing U.S. politicians to look at economic policy in a global framework.

### Further rumblings

A slowdown in the U.S. economy—especially if it is accompanied by a major weakening of the dollar or further rumblings of the still unresolved international debt problem—will cut through some of the more extreme forms of laissez-faire rhetoric which have vitiated serious discussion of international policy co-ordination.

While it would be foolish and unrealistic to seek a return to the fixed exchange rates and Keynesian demand management of the 1960s, it is becoming increasingly clear that, despite the fact that international debt forces alone cannot ways bring state non-inflationary growth in the absence of timely and appropriate government action, whether it is in co-ordinating fiscal policies, overseeing financial flows or assessing the prudence of international banking.

In recent years there has been no shortage of constructive ideas for improving the workings of the international economic system. Both the agenda and necessary for a serious review of international economic policy are ready and waiting for the political will to make use of them.

Only Niger has been strong enough—so far—to stand up to its creditors without IMF backing while many other countries, unable or unwilling to come to terms with the IMF, have drifted helplessly into effective debt.

Of those nations which did seek IMF support, though, including Tandem, Kenya and Zambia, have seen their lending cancelled or suspended repeatedly for non-compliance with policy conditions.

Recently, Sudan governments have fallen amidst bloody fighting in their efforts to avoid the Hobson's Choice between austerity with the IMF's backing or bankruptcy without it.

Most damning of all are the comparisons between Africa's decline in the past decade and the records of other Third World regions. In the 1980s, GNP per capita was growing at a respectable rate of about 1½ per cent both in Africa and

South Asia, for example, and food production in both regions was roughly keeping pace with population growth. Progress for many African countries seems brighter, whereas India, Bangladesh or even China were singled out as doomed nations, unable ever to break out of the cycle of hunger, population growth and international pauperism.

Yet since 1970, most of Asia has managed to improve its lot, despite adversities of the global economic environment. Asian countries have raised their rates of economic expansion and reduced their population growth. Their food production has increased spectacularly since they were last hit by famines in the early 1970s.

What is more, Asian countries achieved these improvements despite levels of aid and investment much lower than those enjoyed by Africa. Foreign aid per capita has been on average eight times higher in Africa than in India and one-third higher than in Bangladesh, despite the fact that incomes per head are lower in India than in 32 out of the 39 African countries, while Bangladesh comes second only to Chad in the list of the world's poorest countries. Even more disturbingly, Africa's aid and investment levels both increased substantially between the 1960s and the 1970s, yet this did nothing to prevent the collapse of productivity and economic growth.

Clearly something is Africa had gone grievously awry, well before the present drought and debt crisis; and in the past few years even Africans, traditionally suspicious of Western political and economic prescriptions, have joined the World Bank in raising the alarm about their continent's disintegration.

The new vision for Africa has as its gospel two World Bank reports. The first was edited in 1981 by Mr Elliot Berg, a peppery and uncompromising American professor, who immediately became one of the continent's prime hate figures as a result of his efforts. The second, published in August last year under the editorship of Mr Stanley Please, a mild-mannered Englishman who has just retired to Oxfordshire after a lifetime working for the Bank, gained acceptance almost immediately as the basic blueprint for Africa's future. The contrasting reception of the two reports reflects much more the tragic developments in Africa over the past three years than any fundamental change in the Bank's analysis.

There are four interconnected strands in this analysis.

African governments must reverse the biases against agricultural production which they have created by maintaining overvalued exchange rates, low food prices and all kinds of subsidies for their urban popula-

tions. It is not just that agriculture has been hobbled by import controls, unrealistic and low administered prices and government-controlled marketing systems for produce, seeds and fertilisers, which frequently act as back-door taxes on the farmers. Less obvious is the fact that the costs of almost any form of subsidies will ultimately fall on the rural population in countries where 72 per cent of the people, on average, work on the land and where progressive tax systems, which would enable governments to recoup the costs of subsidisation from the richer urban dwellers, are either rudimentary or non-existent.

Secondly, governments must bring order into the management of public finances, particularly by rationalising investment plans and, usually, by adopting IMF programmes to deal with their foreign borrowings. In many cases, a recording of public spending priorities could require money to be diverted from investment to current spending contrary to the normal prescriptions of fiscal prudence in the industrialised world. "When the social and physical infrastructure is collapsing all around it, it makes sense to put money into using what you've got—to pay for medicines, road maintenance or even teachers' salaries—instead of building extra hospitals, schools or bungalows," a Bank official points out.

Finally, and most fundamentally, they must show greater willingness to rely on market forces instead of administrative controls, especially in crucial areas of economic life like agricultural marketing. "It is not a question of ideology, Bank officials claim,

pointing to China and Hungary.

The Reagan Administra-

tion, too, plays down the ideological significance of the market mechanism.

"We're not trying to expose their whole economies to unbridled market forces," says one U.S. official. "In many cases, their fears of monopolisation and exploitation by private

merchants are quite understandable—they have small, underdeveloped economies with huge obstacles to effective competition and, sometimes, racial tensions between the mass of the population and the merchant class. But we must persuade them that governments can keep their influence over key economic sectors by acting at the margin and by allowing

competition between public and private sectors, instead of trying to keep absolutely everything under their direct control."

In support of reforms like these, the World Bank wants Western governments, too, to do something: they must increase dramatically the flows of aid to those countries which undertake such "structural

adjustments" and they must coordinate and discipline their own aid ministries to ensure that aid encourages reform, instead of thwarting them by continuing to favour unnecessary capital spending for example.

This is not just a question of bribing governments to pursue a policy of austerity which even in the Western world would be an unpopular diet—and in Africa is an exceedingly dangerous one," as a senior State Department official puts it. More importantly, he says: "We must demonstrate to Africans that economic reform leads to growth." And without more aid, there can be little hope for growth, even in coun-

tries which adopt all the World Bank's prescriptions, when their first priorities must be to service their foreign debts and rehabilitate a physical infrastructure which is reverting to the Stone Age," in the words of one banker.

To provide some of the necessary money, the World Bank has raised \$1.23bn from governments outside the U.S. for a new Special Facility for Sub-Saharan Africa. The money will be spent over the next three years solely on countries which undertake specific programmes of reform and structural adjustment. The Reagan Administration, meanwhile, has launched its own Economic Policy Initiative for Africa. This will channel \$500m of new aid over the next five years to countries selected broadly in line with the Bank's criteria.

The Bank has compiled a short-list of 12 countries which have already started reform programmes worthy of support from its Special Facility when this becomes operational in July. These include some of the nations which suffered the most disastrous falls in living standards in the 1970s, such as Ghana, Uganda, Zambia and Madagascar, as well as consistently better performers, like Malawi and Mali. A further nine countries, including Zaire, Zimbabwe, Tanzania and Kenya, are listed by the Bank as "expected to initiate programmes in 1985-87." The U.S. has made its own selection of four countries—Zambia, Malawi, Mali and Rwanda—to benefit from the first year's expenditure of \$75m under the Economic Policy Initiative.

Yet, despite all this activity, it is still much too early to say that Africa has turned the corner. For the moment of the 1970s did not just arise by accident—they were reflections of powerful vested interests and political forces in both the African and the Western countries.

African governments have subsidised their urban populations and ended up oppressing their farmers not simply out of capriciousness or folly. In part at least, they have been serving the economic interests which dominate their fledgling countries' political structures.

The industrialised countries, too, have had their own commercial motives for encouraging Africans to pour their aid into inappropriate capital-intensive investment projects. More recently, they have cut aid drastically, just when it was most badly needed, in pursuit of domestic budgetary priorities: the World Bank's new facility and the U.S. EPI put together, will fill less than one third of the gap between inflows of capital to Africa in 1980-82 and the World Bank's estimates of flows which are currently planned for 1985-87.

How likely are aid donors now to override their budgetary constraints and make more money available?

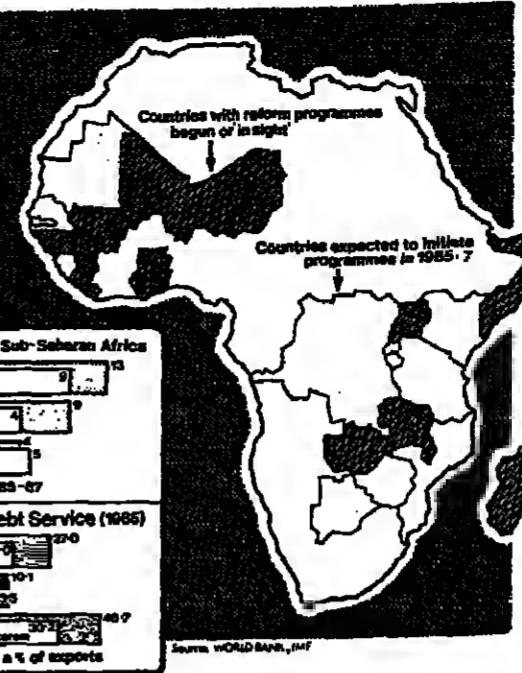
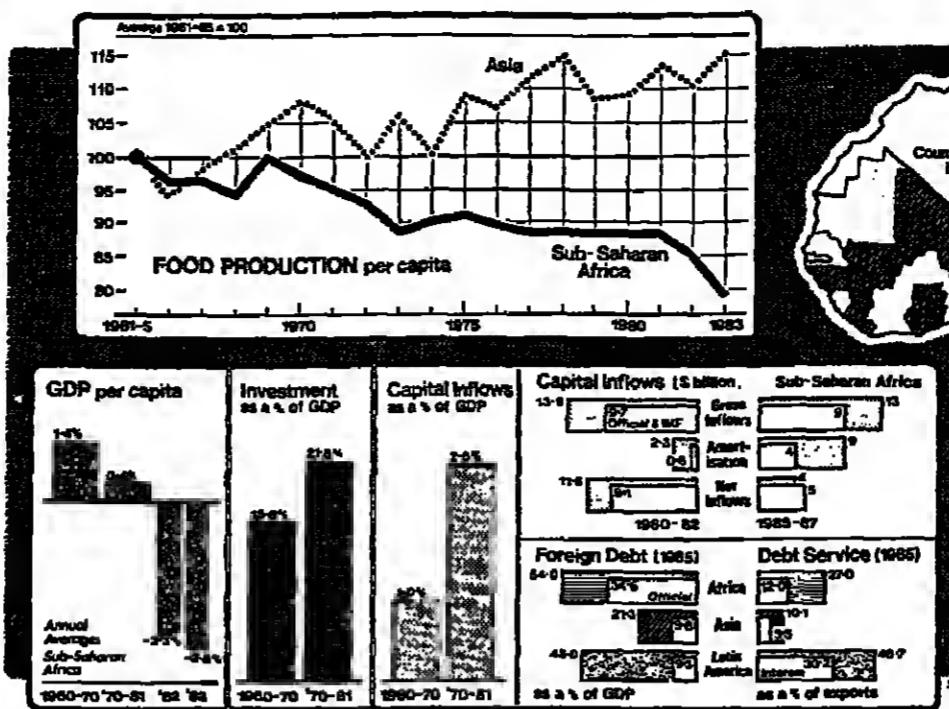
Will they subordinate their perceived commercial interests and offer most of their aid to the purchase of expensive capital equipment, even if it is conditional on tough policy reforms?

Most importantly, how long will African nations, where all political and economic power is concentrated in armed forces and small bureaucratic elites, stick to policies which favour the unrepresented and undemocratic rural masses?

Until such questions can be answered, it will be too soon to say that the African nightmare is over.

Another article on the famine in Africa appeared in the FT on April 3.

## CRISIS IN AFRICA



## Wanted: a revolution in economic thought

By Anatole Kaletsky

### Men and Matters

#### Fading fortunes

The U.S. mergers boom has weakened, having started with the 30-year-old Fortune 500 list of the top American companies. In 1984, as the biggest wave of takeovers flooded through America's boardrooms, the magazine's index lost 19 corporations, the largest number ever to disappear in its history.

It should come as no surprise that in the era of T. Boone Pickens, the Texan takeover king, by far the biggest fall-out has occurred in the oil sector, where Gulf, Getty and Superior Oil have all been swallowed up by larger companies. Elsewhere, the 300 other companies in the Fortune 500 list have been taken over by other companies.

The same kind of mergers are taking place in the rest of the world, though at a slower pace. The



"If you can guess this week's price change, you win a Sinclair CS."

product group, has come under siege from Britain's James Goldsmith, and tyre group Uniroyal (184), is being pursued by Carl Icahn, one of the great masters of takeover strategy itself.

Fortune hints at one of the reasons for this mayhem in its commentary on the performance of the "500". U.S. gross national product last year was 24 per cent up on its pre-recession level of 1981. Sales of the "500" companies, however, declined by 1 per cent over the same period, while profits rose by a mere 2.6 per cent. This is not the sort of record which leaves stockholders particularly happy—a point which Wall Street's new breed of predators has

been quick to seize. Latest news from the market front is that the attacks on the old wealth of corporate America are continuing. Since the new Fortune list was compiled, Phillips Petroleum (number 17 last year) has had a narrow escape, while Crown Zellerbach (129), the forest

The bespectacled, bustling Reich runs a newspaper called Hoy in the commercial capital, La Paz. According to the paper's calculations, the price of four roses by 50,500 per cent between November 1982 and last February, cooking oil went up in the same period by 11,455 per cent, and a visit to the doctor cost 157,745 per cent more.

In such Weimar Republic conditions, with exports of everything but narcotics falling, and striking miners flinging about the odd stick of dynamite as they parade through La Paz, it is a miracle that anyone wants to rule Bolivia.

Still, Reich can take a little comfort from another statistic of inflation quoted by his paper. The price of a meal—now 4,500,000 pesos a kilogram—has risen by under 50,000 per cent.

And the West fears double-figure inflation.

#### Red sky

Peter Miller, the chairman of Lloyd's, who begins a tour of China next week, has opted to fly the flag for Britain. He will tour the People's Republic in a leased masterpiece of British aviation technology.

Unfortunately, the aircraft in question will not be of recent construction. Indeed, it was sold to the Chinese a decade ago. It is a Trident—one of those workhorses of the air which are now being phased out here in deference to age and environmental restrictions.

Last month, Lord Young and a UK trade mission wended their way round China by the civil airline, CAAC. The Prime Minister—no stranger to gaffes in the Far East—had wanted an all-new British Aerospace BAE 146 airliner to be used, but British Aerospace had none to lend, and the Defence Ministry balked at the cost: £200,000.

As usual. In another 10 years or so, we can always sell them second-hand.

Observer

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**BRYMON**

## Economic Viewpoint

# More homes to let: a test of political courage

By Samuel Brittan

THE ACID TEST of the Thatcher Government's sincerity in pursuing supply side policies to help people find their own jobs will be with us very shortly. It arises on an issue where, for once, free market economics coincides with the Government's own policy instincts: where the arguments for action are overwhelming, and the number of potential sufferers extremely small, if the reform is carried out competently.

The key is to be found in a motion on rent controls moved by Peter Hordern, a Conservative MP, on March 8 and supported in a personal capacity by Peter Lilley, the Chancellor's Parliamentary Private Secretary. Mr Hordern made clear that he expected protection for existing tenancies to continue and that he had in mind only decontrol of new tenancies, a road along which Germany, and France, have already travelled. It is with this possibility in mind that Ministers are engaged in a review of the private rented sector.

The withering of the private rented sector is second only to over-rigid labour markets as a cause of high unemployment. A young person moving from a high unemployment region like Liverpool to a more prosperous area may well not be able to afford to buy a new house, or might hesitate to tie himself down straight away. He will be in no position to chance a council house in view of the long waiting lists.

The most natural form of accommodation for him would be private sector renting. Yet, because of rent controls private landlords do not have any incentive to provide such accommodation. On the contrary, the landlord has every inducement to sell rented property for owner occupation as soon as it becomes vacant. The stock of private rented dwellings is less than 2m and is shrinking by at least 70,000 a year.

Private sector lets have fallen from about 90 per cent of all accommodation in 1973, when rent control was imposed, to 45 per cent in 1980 and less than 10 per cent today. On the U.S. it is still well over 30 per cent, in Switzerland over 60 per cent.

Because rents are so far below free market levels, other wastes proliferate. One example is under-occupation. When children grow up, parents find it does not pay to leave for smaller accommodation. Landlords, on the other hand, are tempted to leave rented property in disrepair and dilapidation.

Because there are now so few new lets more and more people now depend on bed and breakfast accommodation, or are placed in hostels of varying kinds, or simply sleep rough. All these abuses have increased manifold since the Labour Government attempted to extend control to furnished accommodation in 1974.

A graphic illustration of the effects of rent control was given in a recent letter to the Standard newspaper by a reader who would have been prepared to spend £5,000 to convert some rooms into a self-contained flat if he could have charged £30 per week. The interested tenants were a couple forced to live in bed and breakfast accommodation costing them £20 a week each. So the let would have gained. But as the landlord could not expect to receive more than £13 a week under a regulated "fair rent," the whole project had to be abandoned.

Some Government faint-hearts have put forward as a pretext for inaction largely imaginary PSBR costs of decontrol of new tenancies, arising from greater eligibility to housing benefit.

On any assumptions, rent decontrol is about the cheapest form of job creation imaginable. Treasury Ministers, who favour housing mobility, are emphatically not citing PSBR costs as an obstacle.

The real worry of Cabinet faint-hearts is, of course, different. It is the fear that the Conservatives will be associated once more with Rachmanism, the harassment of tenants by landlords, and with bad memories of the last major decontrol Act of 1957. The big difference, however, is that while the 1957 Act applied to sitting tenants, new legislation today would apply only to new tenancies. It could and should

also be accompanied by measures to give existing tenants more protection against harassment.

Deregulated new tenants would be protected from being thrown out on the street in the event of a failure to agree a new review by the Protection from Eviction Act of 1977. An additional safeguard might be for new tenancies to be fixed for agreed periods between landlord and tenants, instead of the indefinite arrangements customary in this sector.

The other immobilise argument is that landlords would be put out to let for years if not decades. It is best to concede that the main benefits would come after an election—although it would be wise to have any new Act in operation for a year before, just to disabuse the proponents of horror.

It would also help if the SDF could avoid being as conservative as Labour and, however, many disapproving noises it made, avoided outright repeal commitments and concentrated on the need for a more balanced overall housing policy. At the end of the day, however, the better any new legislation is seen to work, the less the chance of repeat by a new Parliament.

The accompanying table is an entirely unofficial attempt to estimate some of the principal consequences of deregulating new tenancies. The total rented stock is assumed conservatively to rise

by about 2 per cent per annum until it has increased by one-half. This gives 40,000 new lets per annum of which 70 per cent might be in place of owner occupation, 15 per cent in place of council tenancies, and 15 per cent arising from newly stimulated household formations. Another 4,000 new lets per annum might come from previously vacant properties, until 60,000 of these were absorbed.

The following lines show resulting Exchequer gains from taxes on new rents, savings in mortgage interest relief and from savings in, for instance, improvement grants, which are less in the privately rented sector.

The starting point is the 1981 Labour Housing survey showing some 300,000 private sector lets expiring each year. This figure needs to be reduced because of "loop-hole lets" (eg, to companies) or lets on houses which benefit is not claimed. The number of new tenancies at higher rent on which benefit would be paid has, therefore, been reduced to 150,000. But not a great deal hangs on this reduction, as the benefit is applied to only 70 per cent of the new lets.

The following lines show resulting Exchequer gains from taxes on new rents, savings in mortgage interest relief and from savings in, for instance, improvement grants, which are less in the privately rented sector.

The final result is a modest PSBR saving of just over £20m in the first year, rising to over £200m per annum in the tenth year and to nearly £400m in the 20th. The real present value of the savings discounted over 50 years may be between £25m and £95m (at 2 to 5 per cent real discount rates).

Whitehall's estimates probably differ from the table by showing a small PSBR cost in the early years. More pessimistic assumptions might be made, for instance, on initial rent increases and on income tax gains. There might be political obstacles to reduced council house building or to the changes in housing benefit recommended by the recent inquiry.

WE ARE extraordinarily dominated by economic statistics. Financial markets wait breathless for monthly money supply figures—data the Bank of England began to collect only in 1963. Businessmen's confidence is constantly buffeted by endlessly-revised figures for investment, corporate profits and the balance of payments. Everybody has learned to feel over the inflation, earnings and unemployment statistics. Gross domestic product, a flawed measure even of economic activity, is held in awe and regarded by many as a measure of the nation's overall well-being.

Does this plethora of statistics do anything to improve the economy's efficiency? Suppose an indefinite strike at the Central Statistical Office and other data collection units allowed Mr Nigel Lawson, the Chancellor, honestly to disown all knowledge of inflation and the money supply and Mr Tom King at Employment to confess to total ignorance of national trends in earnings and unemployment. Would the economy suffer badly? The strike would not be stricken forward; since the old statistics would no longer exist, they could hardly be used to gauge the impact of their disappearance. Less data, however, would not necessarily entail a less healthy economy.

Most economists would probably argue that such an "information strike" would damage more than their own profession. Information, they might claim, is a scarce but valuable commodity and the more that is available the better for everybody. Such an off-the-cuff response should be treated with caution. Official data gathering is a modern phenomenon. Economic statistics were virtually non-existent in the late 19th century yet British entrepreneurs enjoyed their beday.

Economic statistics may be valuable even if capitalist economies have performed well in their absence but why is macroeconomic data gathering almost invariably a public-sector monopoly? If a market economy needs information of a certain sort, private companies will surely have an incentive to collect and distribute it for

## Broadening the tax base

From the Chief Executive, Abbey National Building Society

Sir—The idea of Dick Taverne's (April 10) to exempt all savings from taxation and instead to tax their realisation as income is admirable and simple. One almost hopes readers will find a multitude of defects in ensure a fuller airing.

He is too discreet to mention withdrawals from National Savings. But scarcely a need, the Government will have thought of it. Another exemption?

Peter G. Birch,

Abbey House,

Baker Street, NW1.

## The Chancellor's intention?

From Mr I. MacKenzie,

Sir—With the forthcoming earnings related "banding" of contributions we appear to have invented an anomaly.

On personal income tax is taxed on a cumulative basis according to the respective bands. National insurance contributions will be levied by a different method—a flat rate on earnings irrespective of the bands." For example on person A, earning £130 per week, both employer and employee will pay 9 per cent that is £11.70. On person B, earning £129.90, the rate is 7 per cent that is £9.09. There is no encouragement for any marginal increase in earnings close to the "break point." Indeed one can foresee peculiar manoeuvres, on the part of employers and employees, designed to avoid paying higher rates on a regular basis.

If we pursue this in a logical conclusion using the DHSS scale with the same earnings of "A," £130, the contributions are £21.50 each. Under the "banding method" that is 9 per cent on £130.50 to £55 per week £2.75, 7 per cent on £55 to £90, £2.45 and 9 per cent on £90 to £130, £3.60, the total is £2.80 a saving of 25 per cent.

This cannot be what Nigel Lawson really means?

Ian C. MacKenzie,

Woodlands, Barrhill Road,

Gorrock, Scotland.

## The nature of an audit

From Mr J. Smartwoolfe Sir—for too long, the accountancy profession has hidden its collective head in the sand. Any business has to satisfy a genuine commercial need or die. The accountancy profession is no different to any other business in this respect, but seems most reluctant to accept it. Most practising accountants still seem to regard their audit appointments as some form of benefit granted them by the Companies Act 1948 and are surprised to

## Letters to the Editor

many financial analysts) is to provide supplementary five years sales turnover figures which have been indexed to the RPI so as to give a broad indication of ex-inflation trends. Perhaps that is as far as the ASC should go for the time being.

Desmond Goch,

4, Paddock Wood,

Hersden, Herts.

## Airline travel

From Mr H. Pritchett

Sir—I am at present in Indonesia where I have just read the survey on regional airports (March 30) and I must confess some of the statements, which bias the argument towards the south east and play down the role of Manchester as an international airport.

I am well qualified to comment having clocked up more than 12,500 miles in the past 20 years and visited more than 120 airports around the world.

I can assure you that Manchester compares very favourably with many of the major airports abroad and it is infinitely better than some.

Back to the survey. The chart on page 11 was prepared by British Telecom London.

Supercall operates as an 8-

length prefix, and is a customer of British Telecom London.

Our services are currently confined to London, but we aim to expand our coverage to other areas.

Kieran Lewis.

1-9, Duxham Road, NI.

## Practical accounting

From Mr D. Goch

Sir—Reading the letter from the chairman of the Accounting Standards Committee (April 2), one cannot but express a sneaking admiration for the persistence with which he and his committee seek to attain the unattainable.

Few shareholders are sufficiently familiar with the finer points of accounting presentation to do more than comprehend the salient points in the balance sheet and profit and loss account—let alone to understand the Byzantine mechanics of current cost accounting.

Gearing adjustments and

working capital adjustments

are strictly for the birds

in the context of financial communications to shareholders.

As managers, they take account

of inflation in other ways when

they are making business decisions

and they have little need to listen to the giren-calls from academia.

One of the most practical

ways in which the compilers

of published accounts can help

shareholders (and, I suspect,

cheat there is still the English Channel to be crossed. If you are thinking of the 10 per cent (from the chart) who use Heathrow as a transit point I doubt if Stansted would be an acceptable alternative.

The chart also shows that only 2.3 out of every 100 passengers arriving in London want to go to the north west. This may very well be true but these are probably first time travellers who are unaware of alternative routes.

No seasoned traveller would route via London to Manchester from choice.

Harry Patchett,  
20, Harley Road,  
Aldermaston,  
Cheshire.

## Premium 'phone services

From the General Manager, Supercall

Sir—Mr Taylor (April 10) on Citycall makes a number of errors.

Citycall is one of a number of premium telephone services provided by Supercall, a new business in British Telecom Enterprises. It is a value-added service, in that it provides constantly updated financial information to telephone callers.

Mr Taylor is also correct in his eight-digit number, 0066 0066.

Our network facilities come from British Telecom London many months in advance of our launch. The facilities are available to other service providers, whether from British Telecom or elsewhere.

Mr Taylor is quite wrong to say that the service is provided by British Telecom London.

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length prefix, and is a customer of British Telecom London.

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Kieran Lewis.

1-9, Duxham Road, NI.

## Into the unknown

From the President and

Chairman, Japan Association

Sir—You quote (April 10)

Derek Kingsbury of Fairey Holdings as saying: "It is sad to see people limited by their own very excellent experience and knowledge, trapped so as to seek into retreating back into the market they know. And this problem is a bit of a national disease." Coincidentally, Mr Nakasone appeals to the Japanese people to buy more foreign products.

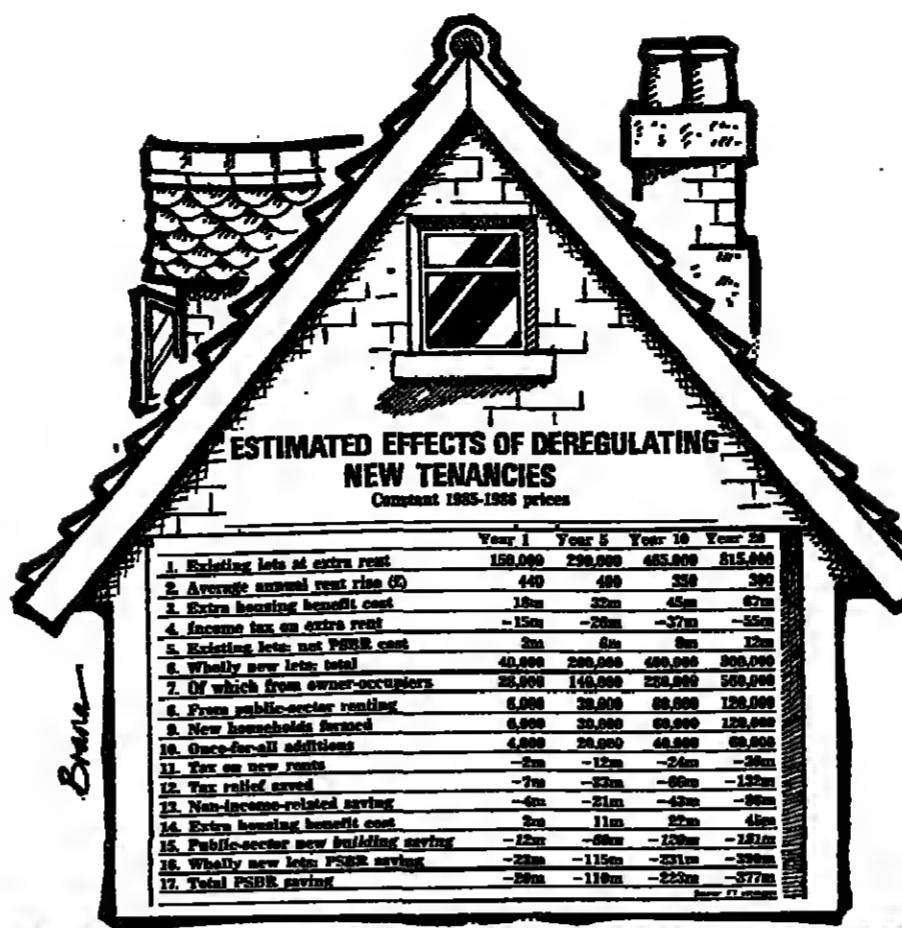
We hope that British exporters who have not yet tried their hand at the Japanese market will be encouraged to do so now. The rewards could be great and there is a wealth of good advice available.

(Sir) Michael Willford,

Graham McCallum,

Regis House, 6th Floor,

43-49, King William Street, EC4.



## Lombard





This announcement appears as a matter of record only.  
The Notes were offered and sold outside of the United States of America.



## Ford Motor Credit Company

**U.S. \$100,000,000**

**11 5/8% Notes due March 7, 1995**

Goldman Sachs International Corp.

Deutsche Bank Aktiengesellschaft

Swiss Bank Corporation International Limited

Union Bank of Switzerland (Securities) Limited

Commerzbank Aktiengesellschaft

Banque Nationale de Paris

Credit Suisse First Boston Limited

Samuel Montagu & Co. Limited

Morgan Stanley International

Société Générale de Banque S.A.

March, 1985

This announcement appears as a matter of record only.  
The Notes were offered and sold outside of the United States of America.



## SUMITOMO CORPORATION

(Sumitomo Shoji Kabushiki Kaisha)  
(Incorporated with limited liability under the Commercial Code of Japan)

**U.S. \$100,000,000**

**10 5/8 per cent. Notes due 1992**

Goldman Sachs International Corp.

Daiwa Europe Limited

Sumitomo Finance International

Kleinwort, Benson Limited

Bank of Tokyo International Limited

Banque Nationale de Paris

Credit Suisse First Boston Limited

Deutsche Bank Aktiengesellschaft

Morgan Guaranty Ltd

Morgan Stanley International

The Nikko Securities Co., (Europe) Ltd.

Nomura International Limited

J. Henry Schroder Wagg & Co. Limited

Sumitomo Trust International Limited

Swiss Bank Corporation International Limited

S. G. Warburg & Co. Ltd.

March, 1985

This announcement appears as a matter of record only.  
The Notes were offered and sold outside of the United States of America.



## The Kingdom of Denmark

**U.S. \$100,000,000**

**10 7/8% Notes due March 1990**

Goldman Sachs International Corp.

Kleinwort, Benson Limited

Daiwa Europe Limited

Banque Bruxelles Lambert S.A.

Banque Indosuez

Crédit Lyonnais

Banque Internationale à Luxembourg S.A.

Daiwa Europe Limited

IBJ International Limited

Deutsche Bank Aktiengesellschaft

Enskilda Securities

LTCB International Limited

First Chicago Limited

Scandinaviska Enskilda Limited

Morgan Stanley International

Kredietbank S.A. Luxembourgeoise

Kansallis-Osake-Pankki

Nomura International Limited

Mitsubishi Finance International Limited

Merrill Lynch Capital Markets

Svenska Handelsbanken Group

Mitsui Finance International Limited

Mitsubishi Trust & Banking Corporation

Tokai International Limited

The Nikko Securities Co., (Europe) Ltd.

(Europe) S.A.

Yamaichi International (Europe) Limited

PK Christiania Bank (UK) Limited

Morgan Stanley International

Yamaichi International (Europe) Limited

Yamaichi International (Europe) Limited

Orion Royal Bank Limited

Yamaichi International (Europe) Limited

Privatbanken A/S

Svenska Handelsbanken Group

Yamaichi International (Europe) Limited

Copenhagen Handelsbank A/S

Den Danske Bank

Yamaichi International (Europe) Limited

March, 1985

This announcement appears as a matter of record only.  
The Notes were offered and sold outside of the United States of America.



## AB SVENSK EXPORTKREDIT (SWEDISH EXPORT CREDIT CORPORATION)

**U.S. \$125,000,000**

**Floating Rate Notes due March 1992**

Goldman Sachs International Corp.

Daiwa Europe Limited

Banque Bruxelles Lambert S.A.

Crédit Lyonnais

Enskilda Securities

IBJ International Limited

Kansallis-Osake-Pankki

LTCB International Limited

Mitsubishi Finance International Limited

Morgan Stanley International

The Nikko Securities Co., (Europe) Ltd.

Nomura International Limited

PKbanken

Svenska Handelsbanken Group

Takugin International Bank (Europe) S.A.

Tokai International Limited

Westdeutsche Landesbank Girozentrale

Yamaichi International (Europe) Limited

March, 1985

## INTERNATIONAL CAPITAL MARKETS AND COMPANIES

## UK SHORT-TERM SECURITIES

## Adventurers needed to test the water

TREASURERS of Britain's biggest companies have been happily dusting off long-sleaved strategies for issuing short-term securities in sterling. But the market dramatically opened last month by Mr Nigel Lawson, the Chancellor of the Exchequer, is likely to see a hesitant start until investor preferences become better defined.

Until the Budget, companies wishing to raise money in sterling for less than five years had been unable to issue securities because the strict wording of the Banking Act would have treated them as equivalent to deposit-takers. Mr Lawson promised to amend the Act, though a commercial paper market (US lines will still be barred by a one-year minimum maturity).

Already, Euronote facilities for Imperial Chemical Industries of the UK end John Deere, the U.S. farm equipment producer, have included options for

the borrowers to make use of the new sterling market—which will encompass domestic and Euro-issues at both fixed and floating rates.

There will still be restrictions. Issuers must be listed on the London Stock Exchange or quoted on the junior Unlisted Securities Market, and new securities must either be listed themselves or be accompanied by the listing particulars which would be necessary for a quotation.

Nevertheless, there are strong signs that the Bank of England is taking a flexible attitude and that the new market will be a stepping stone towards a commercial paper market. The Bank is understood no longer to have any philosophical objection to a full-scale short-term paper market, especially as paper purchased by non-banks would reduce bank lending and demand for central bank reserves.

What options will now be open to corporate treasurers?

Currently, the fashionable way for big companies to raise money is through a Euronote facility offering a range of instruments which can be tapped from the syndicate banks and specify the desired terms.

To envisage sterling issues in the terms of a Euronote facility is not, however, to create the market. To do so, treasurers will need to be convinced that the securities would be competitive with other instruments.

ICI, whose \$400m facility is led by Citicorp, will be able to issue sterling intermediation term notes through the tender panel system, in which a group of banks determined at the start of the facility is asked to bid when an issue is to be made.

The successful bidders then dis-

tribute the securities.

Each tranche will not require approval from the Bank of England—as would any normal individual offering—for the Bank will allow the sterling option to operate as a cap within a maximum amount and a specified period.

One-to-five year floating rate notes with very frequent re-pricings—say, every 30 or 90 days—would create a comparable instrument to U.S. commercial paper. But it is not yet clear to what extent the Bank of England would allow

this, and it would be a competitive way to raise money only if investor appetite for such paper was found.

Some demand from borrowers may come for fixed rate issues, which could be priced relative to gifts of similar maturities just as dollar bonds are related to U.S. Treasuries. The booming market in swaps, in which borrowers exchange floating rate funds for a fixed payment stream or vice versa, indicates a demand for fixed rate funds despite high rates.

Clearly, investor demand will determine the size, maturity range and rate-setting mechanisms of any new market. And given that many of the likely borrowers will be British companies relatively unknown outside the UK, the attitudes of British investing institutions will be important. It remains for a few adventurers to test the waters.

Alexander Nicoll

## Aerospatiale returns to the black

By David Marsh in Paris

AEROSPAZIALE, the French state-owned aerospace group, made a net profit of FFr 330m (\$35.4m) last year after losses of FFr 357m in 1983, on sales up 10 per cent to FFr 25.1bn.

New orders last year rose 57 per cent to FFr 20.1bn from FFr 12.8bn in 1983, with foreign orders rising to FFr 11.6bn from FFr 4.4bn.

Out of total sales—61 per cent of which came from exports—aircraft and guided weapons represented FFr 8bn each, with helicopters FFr 4.8bn and ballistic missiles and space activities accounting for FFr 4.1bn.

Underlining the commercial efforts being made by the group and the gradual recovery in the aerospace market, M. Henri Martre, the chairman, said new orders were expected to rise a further 50 per cent this year.

The group's finances also improved last year with debts dropping from an unusually high FFr 8.1bn at end-1983 to FFr 4.9bn at end 1984. Research and development spending rose to FFr 6.5bn from FFr 5.8bn.

## Consortium to buy stake in Mondadori

By ALAN FRIEDMAN IN MILAN

SIG CARLO De Benedetti, the Olivetti chief who is also a financier in his own right, is joining a consortium of investors including Pirelli and the Berlusconi television group to take a 24.5 per cent share of Italy's Mondadori publishing group.

The deal is to be accomplished via a capital increase of L58.5bn (FFr 52.9bn) which will dilute the 57 per cent of ordinary shares held by the Mondadori family to 33 per cent and will link the Mondadori and the new consortium in a syndicate of control at the Milan-based group.

This afternoon Mondadori is

expected to announce a L13bn (FFr 12.8bn) loss on L930bn of consolidated revenues. This compares with a L4.7bn net profit on a L781bn turnover in 1983.

Mondadori, which last autumn sold its loss-making Rete Quattro television station to Sig Silvio Berlusconi, the television tycoon, is facing a heavy debt burden of L380bn, which compares with group shareholders' funds of L60bn. Before selling out its stake in Rete Quattro, Mondadori lost L175bn on the television venture. Last year Mondadori's debt servicing

costs amounted to 5.4 per cent of total turnover.

After the increase in capital, which needs to be approved by an extraordinary shareholders' meeting, Mondadori shareholders' funds will approach the L140bn level and debt should be lowered.

Sig De Benedetti has harboured ambitions to own a piece of Mondadori for some time, and following the deal he is expected to have 16 per cent of the control syndicate. Others involved in the deal, which is being co-ordinated by Banca Pirelli, include:

Commerciale Italiana, are Sig Berlusconi; Sig Vittorio Merton, the former head of the Confindustria employers' association; Sig Jody Vender, a venture capital financier, and the Pirelli family.

Mondadori, which at the

parent company level saw a break-even result on L700bn in 1984 revenues, has been in need of capital since its television losses started mounting.

Some 45 per cent of Mondadori's

consolidated sales come from its

periodicals and advertising

businesses, while 25 per cent

comes from book publishing.

## Messer Griesheim lifts net earnings by 37.5%

By JOHN DAVIES IN FRANKFURT

MESSER GRIESHEIM, the West German producer of industrial gases and of welding and cutting equipment, strongly increased sales revenue and earnings last year.

The company which is two-thirds owned by Hoechst, the chemical concern and one-third by the Messer family, lifted revenue 8.4 per cent to reach DM 1.767bn (\$57.9m) while net

profit rose 37.5 per cent to DM 55m.

Economic recovery in West Germany and abroad helped to boost sales of industrial gases, but the company has also been developing many new markets for gases, including their use in food preparation.

The welding and cutting equipment division reduced its loss and is expected to reach

break-even this year.

The San Francisco banking group, which has been

struggling to regain its profits

momentum, said net earnings

in the first quarter increased

to \$114m or 63 cents a share from \$101m or 55 cents a year ago.

BankAmerica said the earnings improvement reflected higher revenues and efforts to control costs, which have included sizeable workforce reductions and branch closures. Net interest income grew by 10 per cent in the first quarter to \$1.02bn from \$929m a year ago.

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## U.S. MONEY AND CREDIT

## Signs of slowing economy spur bond rally

WALL STREET's eyes are on the economy—and especially on this Thursday's preliminary first-quarter gross domestic product (GNP) estimate on the 2.1 per cent "flash" estimate.

U.S. bond prices surged last week, confirming a recent sharp rally spurred by indications of a slowing economy and a more generous Federal Reserve Board.

The immediate causes of latest price gains were a comment from Mr Paul Volcker, the Fed chairman, that economic growth could fade later this year, and an unexpected 1.9 per cent decline in retail sales in March—the biggest monthly fall since January 1978.

The other key factor was a further sharp decline in U.S. short-term interest rates—a decline which, taken together with emerging signs of potential economic weakness and another government security dealer going bust, sent the dollar plunging.

At the close on Friday the hottest debate on Wall Street was whether these were all passing fads. For the moment the econ-

	Last	Change	1 week	4 wks	—12 months—	High	Low
Fed Funds (weekly average)	8.00	0.00	8.00	8.00	11.64 (new)	11.64	7.00
Three-month Treasury bills	8.04	0.13	8.02	8.07	11.62	11.90	7.87
Six-month Treasury bills	8.25	0.01	8.29	8.03	11.83	11.83	7.87
Three-month prime CDs	8.00	0.00	8.05	9.15	11.90	10.05	7.87
30-day Commercial Paper	9.00	0.00	8.85	8.10	11.38	7.85	7.85
90-day Commercial Paper	8.45	0.00	8.70	11.40	12.75	7.90	7.90

	Last	Change	1 week	4 wks	—12 months—	High	Low
Seven-year Treasury	102 <sup>1</sup>	+1 <sup>1</sup>	111.20	111.64 (new)	111.64 (new)	111.64 (new)	102 <sup>1</sup>
20-year Treasury	102 <sup>1</sup>	+2 <sup>1</sup>	111.62	111.90	111.90	111.90	102 <sup>1</sup>
30-year Treasury	97 <sup>1</sup>	+2 <sup>1</sup>	111.28	111.65	111.83	111.83	97 <sup>1</sup>
New 10-year "A" Industrial	N/A	+1 <sup>1</sup>	121.00	121.30	121.30	121.30	N/A
New "AA" Long-term	N/A	+1 <sup>1</sup>	121.00	121.30	121.30	121.30	N/A
New "AA" Long Industrial	N/A	+2 <sup>1</sup>	121.13	121.51	121.75	121.75	N/A

Source: Salomon Brothers (estimates). Money Supply: In the week ended April 1 M1 rose by \$1.8bn to \$574.7bn. In March M2 rose by \$7.2bn to \$2,427.2bn and M3 rose by \$12.5bn to \$3,033bn.

to move into the 8 to 8.5 per cent range."

Such a prediction marks a change of heart for Dr Kaufman, but was a commonly held view in the credit markets by Friday's close. To justify his argument the Salomon Brothers economic guru adds: "Importantly the pace of economic activity has not yet stepped up, indeed the weakness in retail sales in March suggests that growth in consumer demand, a key force behind the economic expansion, is waning somewhat."

In addition, the strong dollar continues to be a dampener on U.S. economic output. Capital expenditure plans remain strong, but actual first-quarter spending was probably below expectations. In sum, (this week's) preliminary data may include real first-quarter growth of no more than the 2.1 per cent as reported by the flash, indeed, it could be a little lower."

But not everyone agrees. Mr Frank Mastrogiacomo of Smith Barney believes the Fed will hold to its accommodative policy, but argues that the

Henry Kaufman of Salomon Brothers predicts, lead to a modest Fed easing immediately ahead."

Specifically, Dr Kaufman argues: "Developments within the past few weeks suggest that the U.S. economic environment will at the very least encourage the Fed to maintain a relatively accommodative stance or, as Dr

Henry Kaufman says, "A modest easing—now or sometime soon—is consonant with the more pragmatic approach and attitude the Fed has adopted and enunciated in recent months."

This view, coupled with the view that the inflationary risk remains minimal despite the dollar's recent sharp slide, is grist to the mill for those who believe a slight Fed easing move is imminent.

March decline in retail sales "does not portend a further slowing in economic growth."

Nevertheless, with bearish economic sentiments in the ascendancy—in sharp contrast to the general disbelief which greeted the flash GNP estimate when it was first released last month—other factors including the still substantial M1 increase have been all but forgotten.

Last week's \$1.9bn increase in M1 leaves the basic money supply measure some \$6bn above the Fed's target range of 4 to 7 per cent even though March growth at 5.5 per cent was well below the 10.5 per cent pace of the previous 18 weeks.

In fact, the pace of growth of all the monetary aggregates slowed markedly last month, lending further support to

those who contend that money supply is being subjected to abnormally large seasonal pressures and will be back within target by midyear.

This view, coupled with the view that the inflationary risk remains minimal despite the dollar's recent sharp slide, is grist to the mill for those who believe a slight Fed easing move

is imminent.

As Dr Kaufman says, "A modest easing—now or sometime soon—is consonant with the more pragmatic approach and attitude the Fed has adopted and enunciated in recent months."

In official pronouncements and in FOMC directives, it has stressed the need to consider the importance of international monetary and foreign exchange

developments, the related negative impact of the dollar's strength on U.S. manufacturing businesses, the fragility of some sectors of our financial system, and a slowdown in the velocity of money." This week could prove the key testing ground, both for such sentiments and market prices.

Paul Taylor

## UK GILTS

## Rate cut shakes out the lethargy

A CUT IN base rates, and the possibility of another on the horizon, is starting to stir the gilt-edged market out of its lethargy last week.

Although gains at the very short end of the market were limited to around 1 point, medium-dated stocks ended the week up 1.5 points higher following Friday's decision by Barclays and Midland to move their base rates down to 12.5 per cent.

The market's reaction to the cut allowed the Government Broker to sell out of his remaining holdings (perhaps £150m) of 10.5 per cent Exchequer 1997. The day before he had supplied a small amount of 9 per cent Treasury 1994.

That must have provided some compensation for the jolting reaction given to the market offer of a £400m of Treasury 3 per cent 1989. Brokers estimated that only a small fraction of the issue was taken up by the high-tax-payers that it was aimed at.

The Bank of England's firm hand with the discount market on Friday afternoon signalled clearly that the authorities are

not prepared to see base rates fall too quickly, and would instead like a period of consolidation at between 12.5 and 13 per cent.

But the optimists in the market were still hoping that it U.S. output data this week foreshadowed further weakening in the dollar's value than National Westminster and Lloyds could be tempted into another leap-frogging move to 12.5 per cent.

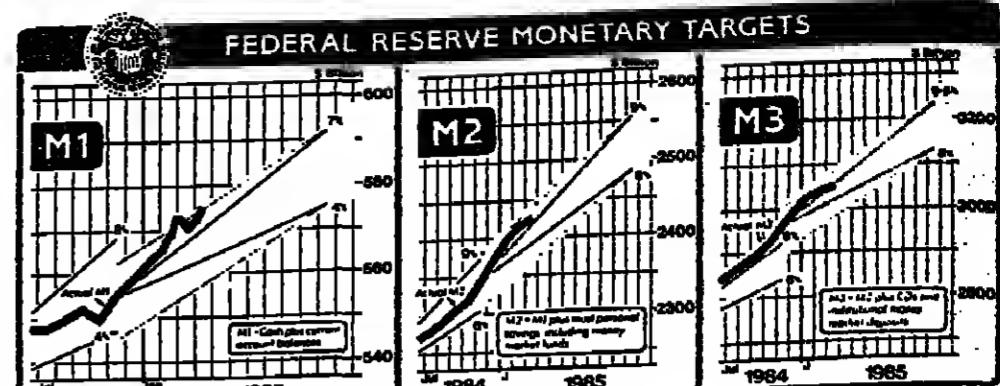
The enthusiasm which accompanied sterling's strong performance pushed the March money supply figures into the original draft.

But, though no worse than expected—sterling M3 is at the top of its 6 to 10 per cent target range for 1984/85—the figures do provide an indication that there is further room which short-term interest rates will not be allowed to fall.

The authorities' stance over the past week has shown that they are prepared to squeeze to market pressure for cuts in the short-end of the gilt-edged market are already discounting base rates of 12 per cent or less, the implication is that further advances may depend on a decisive

number.

Philip Stephens



## FT/AIBD INTERNATIONAL BOND SERVICE

U.S. DOLLAR STRAIGHTS	Issued	Price	Chg. on	Yield
AT&T 10% Fin 11% '84	100	100	+1 <sup>1</sup>	11.43
Amer Savings 10% '84	100	100	+0 <sup>0</sup>	12.18
Amer Savings 10% '85	100	100	+0 <sup>0</sup>	12.12
Asian Dev. Bd 11% '83	100	100	+0 <sup>0</sup>	11.77
Asian Dev. Bd 11% '84	100	100	+0 <sup>0</sup>	11.77
Asian Dev. Bd 11% '85	100	100	+0 <sup>0</sup>	11.77
AIGC 11% '82	100	100	+0 <sup>0</sup>	11.77
AIGC 11% '83	100	100	+0 <sup>0</sup>	11.77
AIGC 11% '84	100	100	+0 <sup>0</sup>	11.77
AIGC 11% '85	100	100	+0 <sup>0</sup>	11.77
AIIC 12% '82	100	100	+0 <sup>0</sup>	10.89
AIIC 12% '83	100	100	+0 <sup>0</sup>	10.89
AIIC 12% '84	100	100	+0 <sup>0</sup>	10.89
AIIC 12% '85	100	100	+0 <sup>0</sup>	10.89
Bank of Tokyo 12% '82	100	100	+0 <sup>0</sup>	12.08
Bank of Tokyo 12% '83	100	100	+0 <sup>0</sup>	12.08
Bank of Tokyo 12% '84	100	100	+0 <sup>0</sup>	12.08
Bank of Tokyo 12% '85	100	100	+0 <sup>0</sup>	12.08
Bank of Tokyo 13% '82	100	100	+0 <sup>0</sup>	11.97
Bank of Tokyo 13% '83	100	100	+0 <sup>0</sup>	11.97
Bank of Tokyo 13% '84	100	100	+0 <sup>0</sup>	11.97
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Bank of Tokyo 14% '82	100	100	+0 <sup>0</sup>	11.97
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Bank of Tokyo 15% '82	100	100	+0 <sup>0</sup>	11.97
Bank of Tokyo 15% '83	100	100	+0 <sup>0</sup>	11.97
Bank of Tokyo 15% '84	100	100	+0 <sup>0</sup>	11.97
Bank of Tokyo 15% '85	100	100	+0 <sup>0</sup>	11.97
Bank of Tokyo 16% '82	100	100	+0 <sup>0</sup>	11.97
Bank of Tokyo 16% '83	100	100	+0 <sup>0</sup>	11.97
Bank of Tokyo 16% '84	100	100	+0 <sup>0</sup>	11.97
Bank of Tokyo 16% '85	100	100	+0 <sup>0</sup>	11.97
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Bank of Tokyo 20% '82	100	100	+0 <sup>0</sup>	11.97





U.S.\$125,000,000  
THE MORTGAGE BANK AND  
FINANCIAL ADMINISTRATION AGENCY  
OF THE KINGDOM OF DENMARK  
(Konigeret Danmarks Hypotekbank og Finansforevaling)  
Guaranteed Floating Rate Notes due 1999 Series 95  
Redeemable at the Noteholders' Option in 1996  
unconditionally guaranteed by  
THE KINGDOM OF DENMARK

Notice is hereby given that the Rate of Interest for the first one-month sub-period has been fixed at 9 1/2% p.a. and that the interest payable for the first one-month sub-period in respect of U.S.\$10,000 nominal of the notes will be U.S.\$73.58. This amount will accrue towards the interest payment due July 17, 1985.

April 15, 1985, London  
By: Citibank N.A. (CSSI Dept), Agent Bank **CITIBANK**

### Istituto per lo Sviluppo Economico dell'Italia Meridionale

(A statutory body of the Republic of Italy,  
incorporated under Law 298 of April 11, 1953)



U.S.\$70,000,000

Floating Rate Notes due 1990

(Redeemable at Noteholder's Option in October 1988)  
Notice is hereby given that the Rate of Interest has been fixed at 9 1/2% per annum and that the interest payable on the relevant Interest Payment Date, October 13, 1985, against Coupon No. 4 in respect of U.S.\$10,000 nominal of the Notes will be U.S.\$492.45.

April 15, 1985, London  
By: Citibank N.A. (CSSI Dept), Agent Bank **CITIBANK**

### A change of name in London...

Seligmann, Rayner & Co.  
announce that with effect from today they will be trading as

### SEIGMANN, HARRIS & CO.

Members of The Stock Exchange

Friendly House, 21-24 Chiswell Street, London EC1Y 4TU  
Telephone 01-606 2394, 01-638 6601 Telex 8812214 Fax 01-628 0792

### ...and a change of address in New York

### SEIGMANN, HARRIS & CO., INC.

Members New York Stock Exchange Inc.

are moving to

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Telephone (212) 483 0878 Telex 422868 Fax (212) 425 9858

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Authorised  
£3,500,000  
£1,000,000  
£4,500,000

Ordinary shares of 50p each  
5.6 per cent. Cumulative Redeemable  
Preference share 1990 of £1 each

£2,860,000  
£587,600  
£3,447,600

Placing by  
Hambros Bank Limited

of 1,800,000 Ordinary shares of 50p each  
at 113p per share

Application has been made for the grant of permission to deal in the Unlisted Securities Market on The Stock Exchange in the above-mentioned Ordinary shares. It is emphasised that no application has been made for the above-mentioned securities to be admitted to listing. The Ordinary shares have been offered to and are available through the market. Particulars of the Company are available in the Extra Unlisted Securities Market Service and copies of such particulars may be obtained during usual business hours on any weekday (Saturdays and Public Holidays excepted) up to and including 25th April, 1985 from:

Hambros Bank Limited, L. Messel & Co.,  
41 Bishopsgate, 1 Finsbury Avenue,  
London EC2P 2AA

Stirling Hendry & Co.,  
16 Royal Exchange Square,  
Glasgow G1 3AD

### FINANCIAL TIMES STOCK INDICES

	Apr. 12	Apr. 11	Apr. 10	Apr. 9	Apr. 4	Apr. 3	1984/85 High	1984/85 Low	Since Compil. High	Since Compil. Low
Government Secs.	81.40	81.11	81.04	80.89	80.75	80.85	83.77	75.75	127.4	46.18
Fixed Interest	85.58	85.47	85.44	85.42	85.44	84.45	87.48	80.63	150.4	50.63
Ordinary	967.8	957.4	960.0	955.9	962.5	958.5	1024.5	755.3	1084.5	49.4
Gold Mines	533.5	524.8	518.0	516.8	509.3	514.4	711.7	438.5	754.7	43.4
FT Act. All.Shars.	614.73	513.82	513.65	612.14	616.70	615.51	650.16	464.84	630.16	51.93
FT-SE100	1275.8	1265.3	1273.1	1270.6	1278.5	1274.8	1309.9	596.0	1302.4	998.6

### UK COMPANY NEWS

### Ford and Talbot reject Banro claim

By Martin Dickson

C. H. Industries, which is making a contested takeover bid for car components manufacturer Banro, said yesterday that both Ford and Talbot had disassociated themselves from a Banro claim that the company's customers did not support CHI.

CHI's statement is a counterblast to a controversial defence document issued by Banro last week in which it quoted three major Banro customers—Ford, Talbot and Toshiba—voicing concern about a possible take-over.

Mr Tim Hearley, CHI's chairman, said yesterday that he had signed a joint statement with Ford and Talbot on the issue.

This quoted Mr Alan Spencer, director of supply for Ford Europe, as saying: "I did not know the context in which my letter would be used. There is no reason to believe that our customers would support CHI as the new owners."

Mr Gordon Kennedy, director of purchasing for Talbot, was quoted as saying that he was "most unhappy with the misleading juxtaposition of my letter with the sooner headline in the Banro document."

Of the three kinds of PCBS

### Fixed offer at 100p puts £20m value on Prestwick

BY TERRY POVEY

Prestwick Holdings, the Scottish printed circuit board manufacturer, is coming on to the market through a fixed price offer of 7.25m shares (about 35 per cent of the equity) at 100p each.

The offer values the company

in general use the group makes two-plated through hole and multi-layer, between them accounting for 80 per cent of PCB demand, which makes the company a volume manufacturer of components rather than a niche supplier.

The brokers to the issue are Fielding, Newson-Smith and Co. and Person and Co. The offer for Charterhouse Japet.

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## UK COMPANY NEWS

## Offer for sale values Asda Property at £17.7m

BY TERRY GARRETT

THE FULL prospectus is published today for the offer for sale of 3.15m shares in Asda Property Holdings, a small North London based company operating in both residential and commercial properties.

The company was founded by Mr Manny Davidson in 1964 though it remained largely inactive until 1972 when he departed from the board of Mr Gerald Caplan's property group, London and County Securities, following disagreements with fellow directors. London and County later collapsed in the property crisis of the mid-seventies. Mr Davidson had joined the quoted group in 1970 when he sold a substantial part of his property business to London and County for £2.3m.

The offer is being priced at 17.7p per share which is a value on the company of £17.7m. Of the shares on offer, 2.8m represent new shares, raising £8.1m for the business. The balance of 300,000 shares, being sold by Mr and Mrs Davidson.

At the offer price Asda is coming to the market on a 23 per cent discount to pro-forma assets of £22.8p. The company

intends to pay small dividends and concentrate on capital growth. For the year ending December 1983 a payout of 3p is proposed for a prospective p/e of 2.48 per cent at the issue price.

The residential property portfolio has been valued by Alsop & Co. on an open market basis at over £18.4m on December 31, subject to existing tenancies.

Within that, some £16.4m is in respect of tenanted flats and houses.

The commercial portfolio has also been valued by Alsop at £17.6m.

Apart from straight property investments the company has an 80 per cent interest in D. W. Bevan, a building company which pre-tax profits for the company have risen from £216,000 to £671,000 in the years from 1981 to 1984.

In the nine months to December 31 1985 the company has moved on to a calendar year-end profits were £612,000. The directors suggests this can be attributed in a straightforward way to suggest profits growth to around £800,000.

It is the company's philosophy

to maximise capital appreciation and to date this has involved a substantial amount of debt financing. At December last net debt of £17.6m stood against shareholders' funds of just under £10m.

Brokers to the issue are Laing & Quicksbank.

## • comment

Whatever else Asda is, it is not cheap. The offer price is pitched at a discount to assets of 23 per cent which is, more or less, in line with the market.

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It is the company's philosophy

## Confident APG on takeover trail again

On turnover almost doubled from £4.12m to £8.21m, the re-structured Almed Plant Group has achieved a return to profits of £207,000, against losses of £136,000, for 1984. The directors say that the foundation laid in the recent past gives them "great confidence" for the future.

They say that the "new-found robustness" of the operating companies, referred to in the interim statement, of this plant hire and fork lift distribution concern, was reflected in the second six months, with the annual profit generated entirely in that period.

Following the successful acquisition of United Forktrucks, the directors say they will be looking to selective acquisitions as a means of furthering shareholders' interests.

Earnings per share were shown as 0.94p (losses 1.42p). The improvement in results was not confined to the revenue stream, though, but was reflected in the balance sheet which disclosed a net asset value of £3.1m against £3.75m, and a substantial reduction in capital gearing to 141 per cent of shareholders' funds.

During the year the directors point out that the forklift division showed veracity and it was caught in the oil well blowout miners and dock strikes, as it moved away from more traditional industries to an expanding and less vulnerable customer base.

The Adapta group, which makes and hires relocatable buildings and cabin compounds for industrial and trading purposes, The post-acquisition integration of Ferrag took place smoothly and its profit contribution met expectations.

Turnover of this USM company increased slightly from £75.83m to £76.18m but taxable profits fell from £1.01m to £817,000.

As forecast, however, the dividend is lifted from 1.86p to 2.8p per share with a final payment of 1.4p.

The group, as stated, has made a profit since 1985 than in the previous year.

At the end of the first quarter, internal figures show pre-tax profits some £200,000 ahead of 1984.

F.T. Share Information

The following securities have been added to the Share Information Service:

Bearista Mines (Section: Mines-Offs), Callens Holdings (Food, Groceries), Maybey Foods (Food, Groceries), Quotron (Systems Inc (Computers), Investment, IpoCo-Unit), 2004 (Investment Trusts), Sims Catering Butchers (Food, Groceries), Transamerica Corporation (Americans).

## Clerical Medical

15 St. James's Square, SW1Y 4LQ 01-930 5474

Executive Investment Pension Plan

	Bid	Offer	Change
Cash Fund	117.9	124.2	+0.3
Mixed Fund	145.3	153.0	-1.0
Fixed Interest Fund	121.9	128.4	-0.1
UK Equity Fund	150.3	151.8	+1.5
Property Fund	111.8	120.8	+0.1
Overseas Fund	151.9	159.9	-2.8
Index Linked Fund	102.3	107.7	+0.2
Stock Exchange Fund	117.8	124.0	-0.9
North American Fund	98.2	104.5	-2.1
Far East Fund	97.2	102.4	-1.2
Special Situations Fund	161.3	166.7	-0.9

Prices 10th April 1985 Unit dealings on Wednesday

	Bid	Offer	Change
Cash Fund	145.4	146.4	+0.4
Mixed Fund	210.5	216.2	-1.5
Fixed Interest Fund	181.3	194.2	-2.1
UK Equity Fund	234.7	241.7	+0.3
Property Fund	131.2	137.3	-1.0
Overseas Fund	221.1	226.5	-0.9
Index Linked Fund	116.0	117.7	-1.1
Stock Exchange Fund	121.4	124.4	+0.3

Prices 10th April 1985 Unit dealings on Wednesday

Initial unit prices available on request, telephone 0272 290568

## Contracts &amp; Tenders



## QATAR GENERAL PETROLEUM CORPORATION

## NORTH FIELD GAS DEVELOPMENT PROJECT

The QATAR GENERAL PETROLEUM CORPORATION (QGPC) intend to appoint a Managing Consultant for the first stage implementation of the Qatar North Field Development Project.

The project involves the staged installation of facilities required for the production, transportation and processing of more than 2,000 million SCFD of raw gas from the North Field lying offshore Qatar, with first gas to be processed on shore early in 1988. The scope will include offshore production facilities, production pipelines, onshore gas treatment and fractionation plants and gas liquids export systems. It will also include lean gas domestic distribution, injection and export facilities.

On appointment the Managing Consultant will be provided with the basic design, and will then execute the detailed engineering design, assist QGPC in procurement, and thereafter co-ordinate and supervise the fabrication, installation, construction and pre-commissioning of all facilities. The Managing Consultant will be specifically excluded from tendering for the supply of equipment and materials, for fabrication, and for any construction or site services contract.

QGPC wishes to identify companies suitable for inclusion in a bid list of tenderers for this appointment. A reimbursable form of contract is envisaged with a fixed lump sum fee element. QGPC hereby invites the submission of pre-qualification documents from major international engineering companies, who can demonstrate that they have the proven experience in the region, and the necessary managerial and technical resources to undertake a major project of similar nature and complexity.

The following information should be submitted, together with any additional information considered to be relevant:—

- Details of the company's corporate structure and the part of the organisation it is proposed would undertake this contract.
- Details of the company's financial performance, including copies of the audited accounts for the last five years.
- Details of all contracts for offshore and onshore facilities within the last ten years, which demonstrate experience and proven capabilities on projects of a similar nature and scale to the North Field Development. Information will include, but not be limited to, the scope of service, value, type and duration of the contracts, the capital cost of the projects and the manpower employed.
- Details of manpower currently available in the home office in the various managerial, technical, and project services functions.
- Outline proposals for the management of the project including such details as planning, cost control, procurement, materials management, project accounting and quality assurance procedures.
- Details of existing and anticipated commitments to other projects.

Companies who have previously submitted pre-qualification documents must submit new documentation in full. Three copies are to be delivered not later than 1400 hrs. on 14th May 1985, addressed to:—

MR. MOHAMMED N. AL-FUHAID,  
SECRETARY TO THE NORTH FIELD PROJECT STEERING COMMITTEE,  
QATAR GENERAL PETROLEUM CORPORATION,  
P.O. BOX 3212,  
DOHA,  
QATAR.

*Late submission or the provision of misleading information will exclude potential bidders from all further consideration. QGPC reserves the right to make direct contact with all client references given in the pre-qualification documents. The Qatar General Petroleum Corporation shall not be bound to include any company in the bid list for this appointment. Their choice shall be final and shall not be contested or opposed by any company.*

This advertisement is published by S. G. Warburg & Co. Ltd. and Citicorp International Bank Limited on behalf of Entrad Investments (U.K.) PLC.

## DON'T RISK LOSING YOUR SHIRT WITH TOOTAL.

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With the associated ACT it's going to cost over £10 million.

Can they really afford it on top of their £25 million capital expenditure programme?

Can they maintain it in the coming downturn of the global textile cycle?

Can they honestly say they would have promised it if they hadn't been fighting a takeover bid?

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This announcement appears as a matter of record only.



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S.G. Warburg & Co. Ltd.

March, 1985

## **NEW YORK STOCK EXCHANGE COMPOSITE CLOSING PRICES**

**Continued on Page 25**

# AMERICAN STOCK EXCHANGE COMPOSITE CLOSING PRICES

# NEW YORK STOCK EXCHANGE COMPOSITE CLOSING PRICES

Continued on Page 2

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**Energy Recovery Investment Corporation S.A.**

In connection with the forthcoming Annual General Meeting to be held on 24th April 1985 at 20 Boulevard Emmanuel Servais, Luxembourg, the 1984 Annual Report and Accounts are being sent to the shareholders. Copies of the Annual Report and Accounts can be obtained during normal business hours from:-

**County Bank Limited,**  
11 Old Broad Street,  
London EC2N 1BB

**Rowe & Pitman,**  
1 Finsbury Avenue,  
London EC2M 2PA

**W. Greenwell & Co.,**  
Bow Bells House,  
Broad Street,  
London EC4M 9EL

**Banque Privée S.A.,**  
20 Boulevard Emmanuel Servais,  
PO Box 474 L-2014,  
Luxembourg

## CURRENCIES, MONEY and CAPITAL MARKETS

### FINANCIAL FUTURES

### FOREIGN EXCHANGES

#### LONDON

##### THREE-MONTH EURODOLLAR

	Close	High	Low	Prev
June	91.77	91.84	90.76	90.70
Sept	90.22	90.31	89.21	90.13
Dec	89.54	89.62	88.74	89.65
March	89.40	89.45	88.35	89.25
June	89.01	89.04	88.24	88.24
Est. Volume: 6,125 (7,148)				
Previous day's open int: 18,474 (18,476)				

##### THREE-MONTH STERLING

	Close	High	Low	Prev
June	70.24	71.04	70.21	71.04
Sept	69.29	69.40	68.22	69.29
Dec	68.29	68.46	68.22	68.46
March	68.04	68.11	68.02	68.11
June	67.14	67.24	66.25	67.24
Sept	66.10	66.18	65.10	66.18
Dec	64.17	64.17	64.17	64.17
Est. Volume: 2,073 (1,510)				
Previous day's open int: 5,687 (5,687)				

##### U.S. TREASURY BONDS 0% \$100,000 32nds of 100%

	Close	High	Low	Prev
June	91.25	91.35	90.76	90.70
Sept	90.22	90.31	89.21	90.13
Dec	89.54	89.62	88.74	89.65
March	89.40	89.45	88.35	89.25
June	89.01	89.04	88.24	88.24
Est. Volume: 6,125 (7,148)				
Previous day's open int: 18,474 (18,476)				

##### CHICAGO

##### U.S. TREASURY BONDS (CSTR)

	Close	High	Low	Prev
June	70.24	71.04	70.21	71.04
Sept	69.29	69.40	68.22	69.29
Dec	68.29	68.46	68.22	68.46
March	68.04	68.11	68.02	68.11
June	67.14	67.24	66.25	67.24
Sept	66.10	66.18	65.10	66.18
Dec	64.17	64.17	64.17	64.17
Est. Volume: 2,073 (1,510)				
Previous day's open int: 5,687 (5,687)				

##### U.S. TREASURY BONDS 0% \$100,000 32nds of 100%

	Close	High	Low	Prev
June	91.25	91.35	90.76	90.70
Sept	90.22	90.31	89.21	90.13
Dec	89.54	89.62	88.74	89.65
March	89.40	89.45	88.35	89.25
June	89.01	89.04	88.24	88.24
Est. Volume: 6,125 (7,148)				
Previous day's open int: 18,474 (18,476)				

##### U.S. TREASURY BILLS (INM)

	Close	High	Low	Prev
June	91.15	91.24	91.13	91.15
Sept	90.61	90.67	90.58	90.50
Dec	90.58	90.65	90.58	90.58
March	90.54	90.67	90.54	90.56
June	90.28	90.35	90.28	90.28
Sept	90.21	90.26	90.21	90.21
Dec	89.81	89.86	89.81	89.81
Est. Volume: 2,073 (2,073)				
Previous day's open int: 2,073 (2,073)				

##### U.S. TREASURY BILLS (INM)

	Close	High	Low	Prev
June	91.15	91.24	91.13	91.15
Sept	90.61	90.67	90.58	90.50
Dec	90.58	90.65	90.58	90.58
March	90.54	90.67	90.54	90.56
June	90.28	90.35	90.28	90.28
Sept	90.21	90.26	90.21	90.21
Dec	89.81	89.86	89.81	89.81
Est. Volume: 2,073 (2,073)				
Previous day's open int: 2,073 (2,073)				

##### U.S. TREASURY BILLS (INM)

	Close	High	Low	Prev
June	91.15	91.24	91.13	91.15
Sept	90.61	90.67	90.58	90.50
Dec	90.58	90.65	90.58	90.58
March	90.54	90.67	90.54	90.56
June	90.28	90.35	90.28	90.28
Sept	90.21	90.26	90.21	90.21
Dec	89.81	89.86	89.81	89.81
Est. Volume: 2,073 (2,073)				
Previous day's open int: 2,073 (2,073)				

##### U.S. TREASURY BILLS (INM)

	Close	High	Low	Prev
June	91.15	91.24	91.13	91.15
Sept	90.61	90.67	90.58	90.50
Dec	90.58	90.65	90.58	90.58
March	90.54	90.67	90.54	90.56
June	90.28	90.35	90.28	90.28
Sept	90.21	90.26	90.21	90.21
Dec	89.81	89.86	89.81	89.81
Est. Volume: 2,073 (2,073)				
Previous day's open int: 2,073 (2,073)				

##### U.S. TREASURY BILLS (INM)

	Close	High	Low	Prev
June	91.1			

## SECTION III

## FINANCIAL TIMES SURVEY

# Professional Personal Computers

THE LONG expected shake-out in the professional personal computer market place has begun and nothing can turn back the clock. By the time the upheaval is over, the shape of the personal computer industry will have — yet again — changed dramatically.

In less than a decade, this industry has grown from nothing to a billion dollar business and gone through three major changes of emphasis on the way.

- The first phase began in about 1974 with the launch of the first hobbyist micro-computers, often in kit form, like the Altair.

- The second and most significant phase was marked by the launch of the Apple II around 1977, perhaps the first true personal computer, and its use by accountants and others to run VisiCalc, best-known of all the spreadsheet-style financial planners.

- The third phase, the move to professional personal computing was initiated by IBM in 1981 with the launch of its own Personal Computer (PC). That machine, and others manufactured by machines designed to run identical software ("compatibles") had some 45 per cent of the U.S. market and close to 30 per cent of the European market by the middle of 1984.

There has been a tendency for certain machines to be associated with particular pieces of software; a large number of the IBM PCs purchased were acquired to run an "integrated" software package called 1-2-3 from the Lotus Development Corporation.

The Lotus package, which made it possible for the executive to move easily between spreadsheet, data files and graphics, moved personal computing forward a massive step. Efforts further to increase the

functionality of the package, by adding word processing and communications capabilities, have not proved so immediately successful.

Now the personal computer is about to assume the role of office work station, building blocks of the office of the future. Mr Elserino Pio, vice-president for strategies at Olivetti, has forecast that within two years, nine out of ten North American office workers will have electronic workstations, and four out of ten Europeans.

The New York-based marketing consultancy, Frost and Sullivan\* point out that the roles of intelligent terminal, word processor and business graphics workstation have now been added to the personal computer's introductory role as a dedicated applications engine for a single user — its use in running VisiCalc, for example.

It adds: "During its next generation of development, this wide range of use will be further extended to comprise a range of more-or-less specialist work stations for the manager, executive, designer, computer programmer and undoubtedly

CONTINUED ON PAGE 2

many more. Personal computers will additionally be found as 'drivers' of a variety of program controlled devices for which mini or micro-computer based boards had previously been employed.

Examples of the diversity of uses to which the professional personal computer are now being put include:

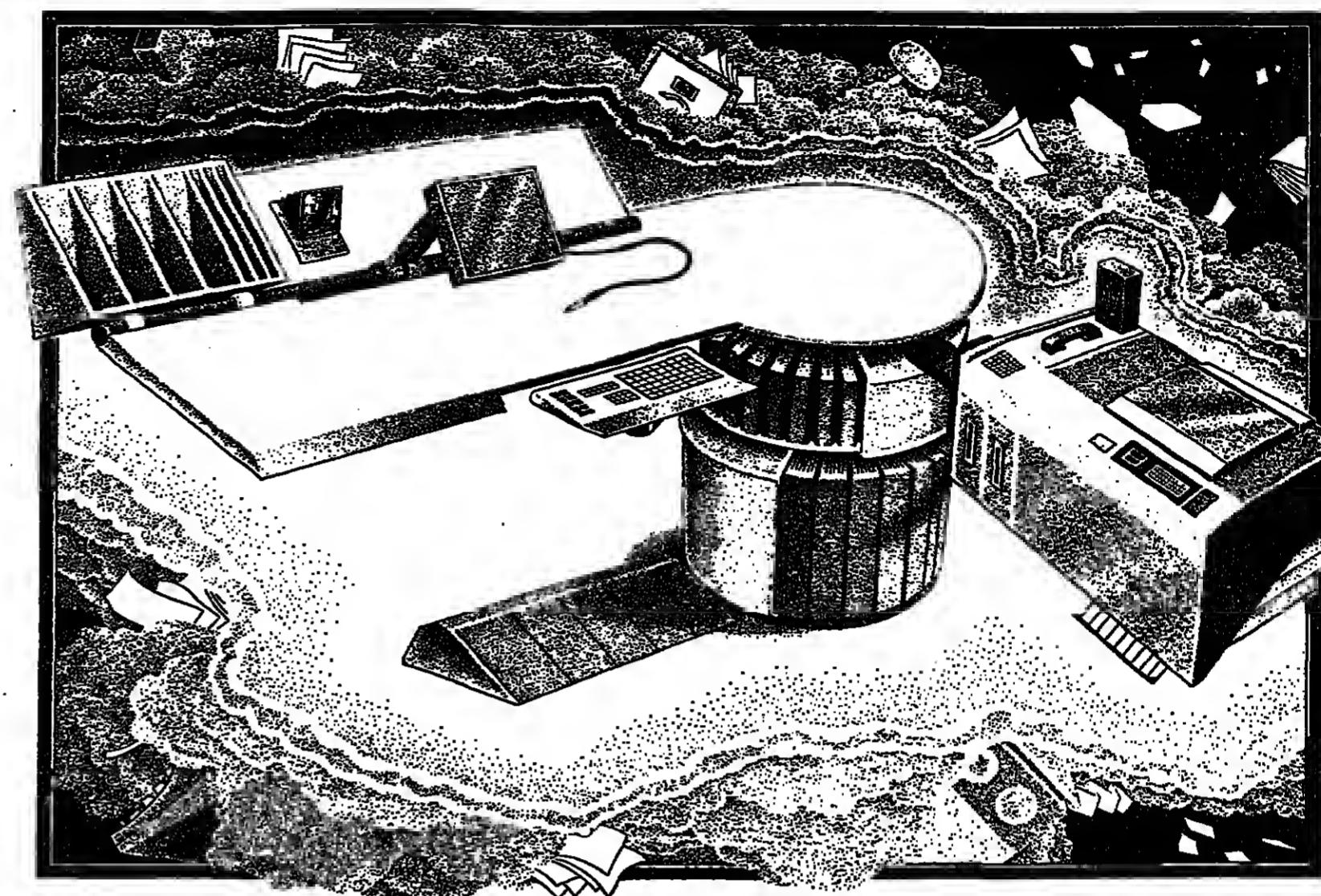
- **Programmer's workstations:** Business computer software written in Cobol, the common business orientated computer language, is created these days by programmers working at terminals connected to mainframe computers, a process which is expensive in computer time. A single programmer can easily use £20,000 worth of computer time in a year.

Now software houses like

Micro Focus in the UK and Cap Gemini Sogeti in France have developed ways in which programmers can write, edit and test Cobol programs on a personal computer before transmitting them to the mainframe to be run.

**Bankers' workstations:**

Banks are selling aggressively the concept of "cash management" to their corporate clients which means the installation of a computer terminal in the treasurer's office on which he or she can inspect

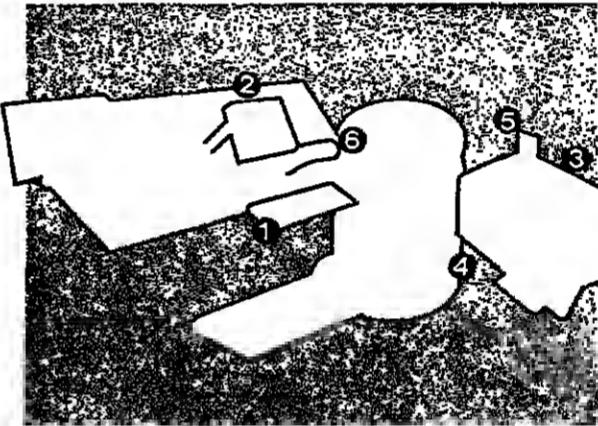


## Upheaval under way in a billion dollar business

● In this survey: the international scene — market developments in the U.S., Britain, France, West Germany, Italy, Japan and the Soviet Union ..... Pages 2 to 5

● Hardware technology: the impact of technical developments in a fast-changing industry ..... Pages 6 and 9

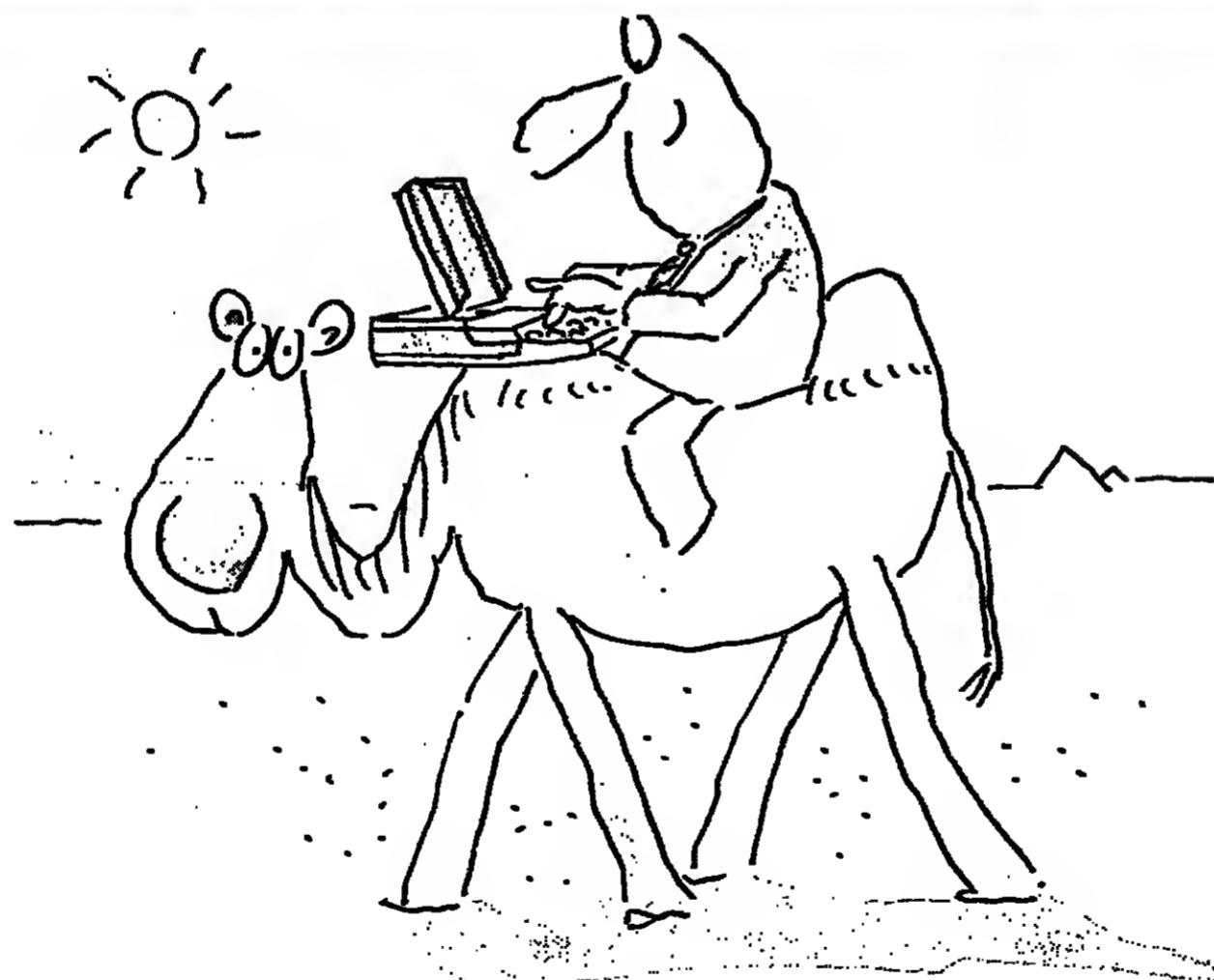
● Software: new operating systems, networking, micro-mainframe links; expert systems, case studies and computer selection ..... Pages 10 to 12



## The work station of the future

TODAY'S personal computer is set to develop into the workstation of the future where voice, text, image and data processing are integrated into one multi-purpose unit.

The visionary system, indicated above, may well include: 1, keyboard; 2, screen; 3, facsimile/copier/page-printer/digital reader facilities; 4, electronic storage; 5, voice link; and 6, light pen.



## The new DATA GENERAL/One. The only industry-standard PC you can use on a camel.

The new DATA GENERAL/One portable computer is really going places.

Quite apart from being powered by mains electricity, it will run for up to 8 hours using rechargeable batteries.

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All the more valuable because at around 10lb, the DATA GENERAL/One is the only portable of its kind that gives industry-standard performance. That means it's completely compatible with a wide range of

IBM® PC software, including Wordstar®, Lotus 1-2-3™ and dBase II®.

And like desk-top computers (but unlike most other portables) it has a full-size 25-line high definition screen.

The DATA GENERAL/One also has a 512KB memory, almost 1.5MB of integral disk storage and the ability to communicate with mainframes (either directly or from remote locations over telephone lines).

If you're investing in a portable computer, it's worth buying the one that supports you all the way.



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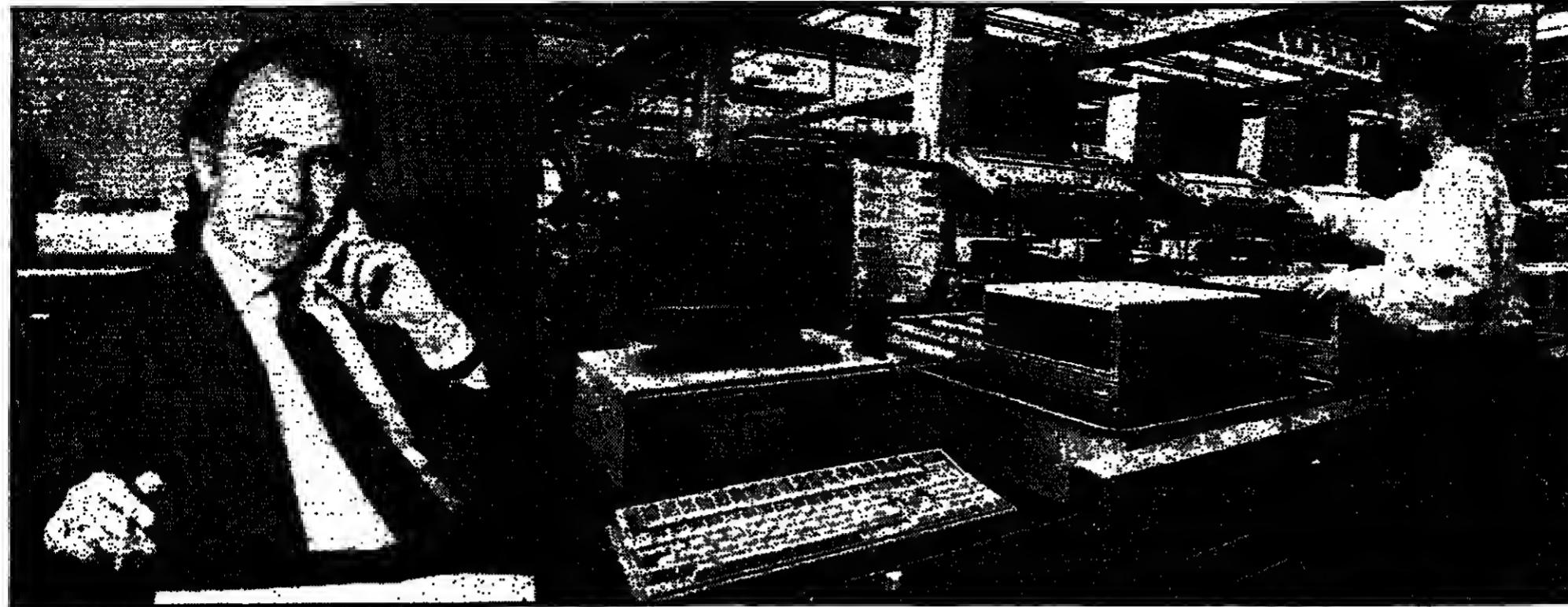
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## Professional Personal Computers 2

Alan Cane highlights Olivetti's six-point strategy which aims to make it the European alternative to IBM.



### Olivetti Group

	Financial highlights in £bn			%
	1983	1982	1981	
Revenues	3,736.2	3,341.4	2,115	+16.8
Research and development expenses	187.2	182.2	154	+3.0
Operating Profit	468.3	337.1	260	+38.0
% average invested capital	20.6	17.0		
Net Profit	295.3	102.8	7.9	3.1
% revenues				
% average stockholders equity	27.4	12.4		
Earnings per share (in lire)	857	318		
Dividend per share (in lire)	240	200		
common and preferred	260	220		
Internal Finance	616.6	388.8		

Source: Olivetti

Sig Vittorio Levi (left), Olivetti's vice president, group operations, and (centre) final tests being made on the Olivetti M24 personal computer at the group's Scarmagno plant.

## Olivetti gears up for a global market place

OLIVETTI'S SCARMAGNO plant, surrounded by the Italian Alps and currently turning out 25 M24 personal computers every hour would not seem out of place in Japan.

Driverless trucks, guided by electrical impulses carried by wires under the floor, move sub-assemblies from one location to another. Control computers—CPS 32 fault tolerant machines built by Stratus of the U.S. in which Olivetti has a 10.1 per cent interest, PDP 11s from Digital Equipment, Olivetti's own M40 and M60 minis—sit at strategic points, their screens reflecting the movement of components and machines through the plant.

Most surrealistic of all, an array of M24s sits under test at the end of the production line all running the Microsoft "Flight Simulator" program which is a test both of the power of the machine and of its compatibility with the acknowledged market leader, the IBM PC. It would give an IBM pilot apoplexy.

In the despatch area, close to a machine which makes

Benedetti was appointed chief executive officer. Profits in 1979 were only £33.5m and the ratio of net financial indebtedness to shareholders' equity was 16.8.

By 1983, a combination of good housekeeping and a powerful product strategy resulted in profits of £295.3m and an indebtedness ratio of only 0.6.

Spectacularly successful though the turnaround was, it was not enough to guarantee Olivetti its place in world markets where, through its alliances with AT & T, it is determined to become the credible European alternative to IBM.

"We have to remain number one in Europe and also become a major world leader in the field... in our business you cannot stay in the middle," says

Carlo De Benedetti in the U.S.

Inevitably, there have been some strains in the matching of two such different companies—Olivetti small, entrepreneurial, well-focused on the office world where all its experience is fixed.

AT & T, large, slow-moving and still coming to terms with its new position in the business

together constitute the "electronic office" has not been very successful in personal computers. It stopped manufacturing 820-11 and 16/8 three months ago.

The Olivetti machine is expected to take their place.

If the deal goes through, Olivetti will have two major distribution channels in the U.S. in addition to its extensive dealer network in Europe.

It should not be forgotten, however, that although AT & T has agreed to take some £260m of Olivetti small systems in the next two years, it has agreed at the same time to take an even larger value of personal computers from Convergent Technologies, a rapidly growing U.S. company selling an especially well-favoured machine.

Olivetti's strategy for the personal computer market, according to Mr Vittorio Levi, turns around the office workstation, at present realised in the shape of the personal computer.

Olivetti believes that the supply of these workstations will be in the hands of a few

companies with the corporate strengths to "supply worldwide, manufacture the immense volumes required and with strong marketing and distribution resources."

The strategy is based on:

• A strong global marketing position — about two-thirds of Olivetti's business comes from Europe. It wants subsidiaries in every industrialized nation in the West. It claims to have supplied more than 10 per cent of the personal computers sold in Western Europe in 1984.

• A broad base of technological and industrial innovation through minority shareholdings in a string of companies throughout the world — the list includes Syntex, IPL, Stratus, Digital Research and now Acorn in the UK. Olivetti is brutally realistic about these investments. "If it does not work, we disinvest," says Mr Levi.

• A broad product range for office automation where all the individual systems can be connected together. Olivetti was not particularly fast into personal computers or word processors but it was a pioneer of electronic typewriters. It under-

stood that progress towards the office of the future would be slow and it provided products that matched the pace that best suited its customers.

Its latest office product, launched only two weeks ago, is a family of video typewriters — electronic typewriters with

flexible manufacturing facilities and a stable financial base.

According to market researchers Frost and Sullivan, Olivetti had an installed base of 55,000 small business computers, 80,000 word processors, 60,000 personal computers and 60,000 scientific computers in Europe by May, 1984.

Frost and Sullivan notes: "It planned (very) to manufacture 350,000 M24s and M25s during the ensuing 12 months, 250,000 of these going to AT & T and the balance to Olivetti's own European markets."

"These are levels which are almost certainly highly optimistic."

Olivetti's workforce in Sembra, preparing the factory systems which will allow it to turn out 75 personal computers every hour, would not agree.

Whether Olivetti can achieve its ambition to become the European alternative to IBM is for the future to decide, but it is starting from a position of strength. And if it hardly fears Olivetti, De Benedetti's team certainly has IBM's watchful respect.

## Major upheaval under way

CONTINUED FROM PAGE 1

the company's balances worldwide, move cash from one account to another and pay bills.

Using a personal computer as the terminal makes it possible for the treasurer to receive reports automatically from the company's various branches and to manipulate the information using, for example, Lotus 1-2-3 or a similar program. Chase Manhattan, Citibank and Bank of America are among the leaders in using personal computers in this way.

• Computer aided design:

To design engineering components electronically used to take the speed of a minicomputer because of the computing power needed to create an image on the screen and carry out the necessary calculations so that the image could be manipulated in various ways.

Now companies such as Autodesk in California have developed software costing only £1,000-£2,000 which runs on virtually any personal computer and which brings "personalized" computer-aided design to a whole new range of professions, including architects, property developers and graphics designers.

• Networking:

The most advanced personal computers use very powerful microprocessor chips capable of handling 16 or more bits at a time. This new power can be harnessed by sophisticated microcomputer operating systems such as Unix or Concur-

rent DOS—software programs which order the internal workings of the computer—to enable the machine to carry out several tasks at once and to be linked into intercommunicating networks capable of supporting the work of an office group or department.

It is the versatility and low cost of the personal computer which is responsible for the paradox that while researchers, such as Frost and Sullivan, are predicting that in Europe alone total personal computer shipment values will increase to £1.5 billion annually, to £8.1 billion during 1988 and to more than £20.5 billion over the five-year period to 1993, the casualty rate among new suppliers is rising significantly and some established manufacturers are experiencing a marked decline in sales.

Apple Computer, for example, which has not had the success it expected with its novel "Macintosh" personal machine, recently closed its factories for a week. It could show little or no profit for this quarter. Digital Equipment, which created and still leads the world in minicomputers, has recently discontinued its "Rainbow" series of personal machines and is planning to come back with IBM compatible models.

Xerox Corporation has ceased manufacturing its 820-11 and 16/8 machines and is deep in discussions with Olivetti about marketing its well-regarded M24 computers in the U.S.

Olivetti has already a reciprocal personal computer marketing arrangement with AT & T which will not be affected by a deal with Xerox.

The hard fact is that although the market for workstations worldwide (for which read per-

sonal computers) could be as large as 130m in the next five years, they will be supplied by a very small number of extremely large companies, able to manufacture huge volumes at very low cost and distribute and market them effectively.

Even IBM which, over the years, has proved its ability to become the lowest cost producer of everything from high-speed memories to professional personal computers, pulled out of the home computer market because it could not generate sufficient profits there.

But IBM is one of the few companies whose future in personal workstations seems assured. Only a year ago, Apple would have been in this category but unless it can convince the business community that it is selling a genuinely professional machine, even its future is in question.

It is early days to assess the contribution of the combined forces of AT & T and Olivetti (with perhaps Xerox) and the Japanese, despite their manufacturing skills, remain an unknown quantity (but never forget motorcycles, cars or videocassette recorders).

There will, however, always be room for the makers with a specialist niche like Convergent Technology in the U.S. and ACT in the UK.

This "fourth phase" of the personal computer revolution will be the most critical—and only the very strong or very talented will survive.

\* Frost and Sullivan: Corporate Personal Computers: the market in Europe, 2 vols. Jan 19.

## Key advantages of the TeleVideo 922.

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Texas Instruments' professional computer (left) with the TI speech command system. By means of a microphone or headset, voice input is substituted for keyboard input, leaving the operator's hands free to carry out other tasks. Right: IBM's PC displaying the Prestel viewdata system



## Professional Personal Computers 3

# Still the largest market in Europe

BRITAIN'S ENTHUSIASM for personal computers shows no sign of abating. The UK market for personal computers is still significantly larger than any other country in Europe and is only beaten by the U.S.

The British market is dominated by Applied Computer Techniques and IBM, which have, broadly speaking, equal shares. A long way behind are companies like Hewlett-Packard, Digital Equipment, Olivetti and Apple with relatively small shares of the market.

While ACT is the only strong British presence in the market there are a number of small entrepreneurial companies which are struggling with varying degrees of success — for a toehold in this booming market. These include Research Machines, Advance, Jarrogs and Torch.

There are a number of reasons why the market has been so strong in Britain, despite its comparatively weak national economy. These factors include:

- Britain is the "first stop" for U.S. manufacturers because of the common language. This is particularly important in the computer sector because software for the U.S. market is often designed for Britain (ACT itself started by importing the Sirius computer from Victor Technologies of California).

- The UK also has very strong indigenous skills in computer technology, even if these have not always been successfully exploited commercially. This expertise has resulted in a number of small companies being set up which have developed their own personal computers. A more important factor is Britain's very strong software industry producing its own programs which, in turn, have stimulated the market.

- Although the UK has a relatively high number of large mainframe computers, it has much fewer small business computers than West Germany.

- There are other intangible reasons which may have contributed to the enthusiasm British business has shown for personal computers. These include the country's apparent interest in new technologies in the domestic market, particularly home computers. Another reason, according to some analysts, is the strong position of a domestic producer, ACT.

Although the market may be

## UK demand surges ahead

JASON CRISP

strong, a number of British companies — including hardware and software companies and distributors — have had problems. A number have found difficulty in developing products or getting them accepted by the market, which is inevitably suspicious of small, unproven companies.

One of the greatest problems in the UK sector lies in the distribution of personal computers. There are more than 2,500 computer dealers in the UK, but many are small, unable to provide proper customer support, under-capitalised and have too small a turnover to be viable in the long term. There is already a high casualty list as such companies go into receivership.

According to a study by Romtec, specialist marketing consultants, the top 250 dealers (representing only about 10 per cent of the total) account for 50 per cent of sales of micros to the end-user. It shows how small a market has to be shared between the remaining 90 per cent of dealers.

Inevitably, much attention in the UK personal computer industry is focused on ACT. The company was a moderately successful and well-established computer retailer which, started importing the Sirius computer in 1981. It was the first 16-bit computer to become available in the UK and had 18 months in which to get established before IBM launched the PC in Europe. ACT had a runaway success with the Sirius.

In late 1982 the company decided to develop and manufacture its own personal com-

## Re-organised

The OPD is a combined personal computer and advanced telephone which is claimed to be very easily used by managers with no computer experience. The OPD was developed in conjunction with home computer group, Sinclair Research, and the software company, Vision. OPD has significant orders from Telecom Australia and British Telecom, for the test terminal and is hoping for sales of £100m a year.

The one new family of busi-

## UK market values

British market shipments forecast for personal computers in the corporate environment, in values by product type. These values are expressed in \$m at constant end-1984 levels, on an "if-sold" basis, and rounded to the nearest \$10,000.

Product type 1985 1986

STAND ALONE

Hardware ... 132.72 142.50

Software .... 64.78 106.83

Total value ... 197.50 249.33

NETWORKED

Hardware ... 26.19 79.28

Software .... 8.91 42.30

Total value ... 35.10 121.50

ALL TYPES

Hardware ... 195.79 227.70

Software .... 96.11 261.68

Grand totals... 291.90 489.38

Source: Frost and Sullivan

puter. It had, correctly, feared that Victor was not well run and not developing the right new products. (Victor later filed for protection under chapter 11 of the U.S. bankruptcy code.)

In less than a year ACT developed and began to manufacture the Apricot, which is now its main product line. ACT's sales have continued to rise dramatically. In the year to March 1985, turnover was just over \$20m, which is expected to rise to nearly \$100m in the financial year just ended. Last month ACT told City analysts that sales in the current year would be over £160m.

ACT has had success in a number of overseas markets including the Middle East and Australia. It has also recently embarked on a major but delayed push into France and West Germany where it hopes for a turnover of \$20m this year.

Its biggest gamble is a move into the U.S. where it has set up a new company, Apricot Inc, with \$20m, partially financed by institutions and existing shareholders. ACT has a 20 per cent stake in Apricot Inc with an option to take a controlling interest. Although ACT says it only wants to capture 1 per cent of the U.S. market within three years, it would be worth \$150m a year.

Apricot is, however, running behind schedule because it underestimated the time taken to train dealers. Even so, analysts have not been too concerned.

After only very modest success in the personal computer field, ICL, the only indigenous British mainframe computer company, looks in a stronger position with its recently-launched One Per Desk (OPD).

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As part of a major reorganisation, Acorn dropped plans to try to market and distribute the BBC range itself. It will, however, sell them to other companies on an original equipment manufacturer (OEM) basis.

The problems of marketing and distributing personal computers in competition with well-established strong companies like IBM and ACT may well prove to be a major hurdle for those small entrepreneurial companies in Britain which still hope to find a niche in the market. Increasingly they are acknowledging that technical brilliance is not enough and are trying to get larger and more powerful companies to sell their products.

TEA LEAVES and a crystal ball are probably the best means of predicting the 1985 performance of the U.S. personal computer market. Market data and the conventional indicators of sales and profits have become largely irrelevant in the current state of gross uncertainty that surrounds the personal computer business.

IBM has stated simply that "the market remains strong through the first quarter." Apple Computer, on the other hand, says that the market is "fragile and highly competitive."

Surveys conducted by InfoCorp, the Cupertino, California market research company, indicate a dramatic decline in purchases of high-end personal computers, starting in June of last year.

In September 1984, unit sales of high-end personal computers at the highest dealer were at 50 per cent of the growth trend line that has been maintained for the past two years.

Sales improved over Christmas, but much of the added sales volume came in the high-end of the home computer sector. Since Christmas, IBM's sales have dipped about 15 per cent, while sales of Apple's Macintosh are down by 40 per cent.

The slowing growth rate of the industry has been attributed to several factors. General economic trends show a slowdown in capital spending, which would impact the personal computer industry as much as any other business equipment supplier. Seasonal fluctuations in the market, while most dramatically seen in the consumer end of the market, are also applicable to business sales.

Another factor is the increasing number of business personal computers sold direct by manufacturers. These sales, portion of IBM's sales, do not show up in the retail surveys.

"The research firms are surveying the wrong people," maintains David Norman, president of Businessland, a major retail chain.

"The business market is very strong. It's the home computer market that's in the pits. Corporate America has a blank cheque for equipment to increase productivity."

Changes in the distribution channels for personal computers have certainly added to the confusion surrounding the market. IBM's market share, for example, is variously estimated at between 25 and 60 per cent of the market. More than half of IBM's personal computer sales are now estimated to be controlled by the company — either through its own computer stores or through direct sales.

market conditions that prevailed in 1984 will magnify to become a firestorm in 1985. A number of former players will burn in the aftermath."

Several are already feeling the heat. Digital Equipment Corporation has discontinued its "Rainbow" series of personal computers, although the company promises to make a comeback in the personal computer market with an IBM-compatible machine.

Data General has conceded that sales of its Data/General One portable computer have been disappointing. The company has redesigned its portable display to meet customer complaints.

Xerox is another victim of the personal computer market. Despite having created much of the technology that is today used in Apple Computer's Macintosh, Xerox has been unable to capitalise upon its expertise. The company has withdrawn its own personal computers although it is expected to sell machines manufactured by a third party in the near future.

Apple Computer, the second largest U.S. personal computer company, is not immune to IBM's moves either, with its Apple II sales significantly weakened over the Christmas period by IBM's PC Jr. Apple faces a bleak first quarter of 1985. The company is shutting down its production plants down for one week as inventory mounts up.

Apple's Macintosh was "left

out in the cold" by competing IBM products at Christmas, according to Apple chairman, Steve Jobs. The company has seen only a "slight improvement" in sales since then.

Now, just as the company is about to begin its major push into the business market it has been hit by the bad news that "Jazz," a Lotus development integrated program for the Macintosh computer, will be delayed by two months.

The problems of the personal computer-makers have spread to computer disk drive manufacturers and floppy disk suppliers and the retailers who bring their products to the public.

Many independent computer makers are holding on for dear life, hoping that they will still be in business by the end of the year.

The suppliers to the personal computer industry — chipmakers, disk drive manufacturers and floppy disk suppliers — are also feeling the cold reality of the personal computer market which have not lived up to the inflated expectations of a year ago.

The semiconductor industry blames personal computer makers for its current severe downturn which was largely caused by over-heated demand in 1983-84, they believe.

## Uncertainty

Disk drive manufacturers have suffered cancelled orders and uncertain demand from their major customers while the floppy disk industry appears to be going through a period of consolidation with major acquisitions including the recent takeover of Dysan by Xidex and the proposed purchase of Verbatim by Eastman Kodak.

Despite the clouds that now seem to be hanging over the U.S. personal computer market, there will be some sunny days ahead in 1985. New products from IBM which are expected to include "PC2," a replacement for the four-year-old IBM personal computer, and a portable personal computer could boost sales.

Before introducing the new models, IBM is expected to reduce the retail price of its current products. IBM compatible manufacturers are expected to scurry to match the PC-2 and IBM's PC-AT, creating new interest in the market.

Apple does not plan any new computers this year, but the company is expected to move to match IBM's new prices and will fight aggressively for a share in the office market.

# The competition intensifies

## Professional Personal Computers 3

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Apple's Macintosh was "left

## The worldwide market

### Personal computer market percentages worldwide by price class and product

#### • Systems under \$1,000:

	1984	1985	1994	CAGR 1984-89	CAGR 1989-94
%	%	%	%	%	%
Desktop	6.7	20.1	23.3	24.6	2.9
Portable	2.0	7.5	12.7	30.2	18.7
Total	8.7	27.6	41.0	26.0	8.2

#### • Systems between \$1,000 and \$6,000:

	1984	1985	1994	CAGR 1984-89	CAGR 1989-94
Desktop	4.7	11.5	14.2	19.8	4.1
Portable	0.1	2.0	3.7	32.1	13.1
Multiuser	0.1	1.2	3.5	64.4	23.9
Total	4.9	14.8	21.4	24.7	7.7

#### • Worldwide shipments in thousands of units, 1984; data from three major U.S. market research groups:

	Dataquest	Computing	InfoCorp	Spread
IBM PC	780	660	588	33
IBM AT	75	47	60	26
Apple III	550	555	440	17
Macintosh	230	231	240	17
Compaq	105	122	108	26
Portables				

# THE WORLD'S BIGGEST KNOWN ORDER FOR PCs DIDN'T GO TO ANY OLD CHARLIE.

The order, from the American Defence Department, went to Zenith Data Systems.

## Professional Personal Computers 4

# Sales should rise rapidly this year

FRANCE'S professional personal computer market is developing into a battle ground in which French and international data processing groups are exchanging competitive swipes with increasing ferocity.

The country still lags a long way behind both the U.S. and the UK in terms of implantation of micro computers for home and business use. But, partly reflecting France's late entry into the computer scene, sales of machines for business purposes grew by well over 50 per cent last year.

Market analysts predict that sales will continue to advance rapidly this year, despite a relative slowdown in the first months of 1985.

The fight for supremacy is very much an all-American struggle between IBM and Apple—but is strongly coloured by both companies' efforts (highly successful in the case of IBM) to identify themselves and their products as closely as possible with the French scene.

In third place, but coming up strongly with the aid of still-continuing Government financial support and a more efficient product and marketing strategy, is the nationalised computer group, Bull. The company last year broke with 20 years of efforts to build up a fully independent French computer industry by unveiling a new micro-computer, the Mical 30, which is compatible with IBM equipment.

In the background is a clutch of other French electronic groups with activities both in the business computer range and in less sophisticated equipment for domestic and educational use.

The profession is currently in a flurry over the impact of the plan, unveiled at the end of January by M. Laurent Fabius, the Prime Minister, to install 120,000 computers in schools and other education establishments by the autumn.

This is not the first school computer project. It supersedes a plan already announced in autumn 1983 to tool up schools and universities with 100,000 computers by 1988.

The ambitious new scheme will give a boost to the fortunes of the domestic companies—

## Expansion in France

DAVID MARSH

Bull, Thomson and Matra—which look likely to gain the bulk of the orders. And, more generally, the aim of course is to strengthen the hold of "computer culture" in France and narrow the country's gap compared with other leading Western nations.

According to a survey last year from the market research company International Data Consultants, only 1.5 per cent of French households are equipped with a micro-computer (of either the domestic or the professional type) against 11 per cent in the UK and U.S.

Small businesses are becoming increasingly interested in information technology, with the proportion of companies of less than 200 employees wired up to computers now estimated at around 15 per cent against only 14 per cent in 1983, according to another survey.

### Predictions

But again, France suffers in comparison with other European countries, with a Government-sponsored report earlier this year emphasising that the use of micro-electronics in small businesses was well below the levels in Britain and West Germany.

As for the market itself, Intelligent Electronics, the Paris-based electronics market research concern, believes that

## Market comparisons

Market shipments forecast for personal computers in the corporate environment, value by product type. These values are expressed in \$m at constant end-1984 levels, on an "if sold" basis, and rounded to the nearest \$10,000.

Product type	FRANCE			WEST GERMANY		
	1984	1985	1986	1984	1985	1986
STAND ALONE						
Hardware	86.26	112.35	127.20	96.26	124.95	132.70
Software	27.83	34.54	36.48	31.05	39.99	40.03
Total value	114.08	157.19	122.73	127.31	165.94	142.73
NETWORKED						
Hardware	9.10	26.61	70.40	9.63	23.04	79.24
Software	1.87	7.01	37.00	1.98	7.84	42.39
Total value	10.97	27.62	106.00	11.61	30.88	121.50
PORTABLE						
Hardware	13.75	31.25	57.75	16.50	33.75	66.00
Software	5.75	14.54	6.90	20.52	52.25	
Total value	19.50	50.25	103.68	23.46	54.27	118.50
ALL TYPES						
Hardware	109.11	164.21	255.45	122.39	181.74	233.90
Software	33.45	50.85	179.02	39.93	89.35	198.83
Grand totals	144.56	245.06	434.47	162.32	271.09	432.73

Source: Frost and Sullivan, 1985

French sales of business micro-computers priced at more than \$1,000 grew to 140,000 last year from 80,000 in 1983. It is predicting sales of 200,000 this year.

Figures from IDC—although on differing definitions—are appreciably lower. But there is no denying that the overall French computer market last year grew more strongly than in most other European countries apart from Spain.

The phenomenon has helped Bull make some relatively encouraging progress in its long haul finally to make profits after years of heavy losses—a process which the company now believes will lead to break-even this year after a reduced deficit of FFr 489m in 1984.

Intelligent Electronics believes that Apple helped the business computer league table last year with 50,000 units sold in France—ahead of IBM with 38,000. France is the only major European market where IBM's PC has not yet staked up a commercial lead over Apple—although the PC looks almost certain to overtake its American rival in France this year.

Apple itself puts its French sales last year at 70,000 units making a turnover of FFr 940m—an astonishing increase from 30,000 units (FFr 375m sales) in 1983 which well illustrates the pent-up demand in the market.

M. Jean-Louis Gassée, the chairman of Apple's French subsidiary, is predicting further sales' growth of 50 per cent this year and denies claims from the retail market that the Macintosh's sales performance in France has fallen below expectations. In the seven months starting last

June, Macintosh sales in France totalled 14,800 units, making up 31 per cent of total sales in value terms in 1984, he says.

Apple has made contact in recent months with Bull and the also nationalised Compagnie Générale d'Électricité group over the possibility of licensing the Macintosh technology to allow production in France. This would have allowed the U.S. company to profit from M. Fabius's schools computer programme.

Sinclair Research, the British company which is the leader in France's domestic computer market and is increasingly crossing the line into the professional sector, has also been lobbying hard for inclusion in the programme. The company has been in contact with a number of French electronics groups—including CITI, Alcatel and another state-owned telephone group CGCT—and subcontracting work in order to manufacture its QL model in France.

The latest Government indications are that the schools plan, however, will exclude foreign companies at least from the initial batch of orders. So Apple and Sinclair—look likely to continue selling their equipment to schools and colleges via "back-door" rather than official routes (for instance, via parent teachers associations or discounting directly with schools).

This method, according to Apple, enabled it to sell 20,000 models to educational establishments between autumn 1983 and end-1984—despite the company's absence from the authorised list of suppliers for schools.

The magazine, which carries out a monthly "best-seller" survey in co-operation with Roland Berger, the Munich-based management consultants and market researchers, says that IBM/PC and Apple II have been "slipping in" for market leadership in the business computer segment of the market. First one, then the other has been taking the lead in the monthly race.

Diebold, the Frankfurt-based information technology specialists and management consultants, have forecast a slowing down in the rapid growth of the home computer market in West Germany, but see a steadily rising market for the higher-priced professional systems.

A Diebold analysis suggests, for instance, that in one higher priced segment of the market (computers priced between DM 5,000 and DM 10,000) sales could grow from 4,000 in 1983

to about 85,000 in 1989.

In a still higher segment (from DM 10,000 to DM 25,000), sales could rise from 53,000 in 1983 to about 15,000 in 1989.

Theoretically, the professional market still has plenty of potential. After all, only 1 per cent of West Germany's 60,000 general practitioners doctors have a personal computer in use, according to Dr Kurt Eckermann, the magazine publisher.

Among the 60,000 dentists, it's the same story, he told a recent conference. Among the 30,000 lawyers, the use of computers is somewhat greater but still relatively slight at 3 per cent.

West Germany has more than 2m work places, ranging from tiny offices and factories to large concerns. According to the Munich-based Infraest communications research organisation, its personal computer has found its way into only about 85,000 of them at the beginning of 1984.

But interest seems to be growing, particularly in the commercial area, and market prospects for personal computers as well as computer systems are generally viewed optimistically.

## The battle heats up

HERR WOLFRAM NADEBUSCH, sent in by Volkswagen to restore its Triumph-Adler subsidiary to full health, is embarking on a new drive in the professional personal computer market as a key part of his strategy.

Spurred along by the new chief executive, the West German office equipment and electronics company is about to launch new personal computers on which it is setting high hopes. At the same time it is building up a network of distribution and information centres in major cities to improve its marketing prospects in computers and computer systems.

Triumph-Adler's latest moves, which will have an important bearing on the future of the company, are being viewed with great interest by other groups in the West German personal computer market.

With IBM and Apple dominating the business segment of this market in West Germany, Triumph-Adler is among the large number of companies, local and foreign, vying for a respectable share in a growing but deadly competitive business.

Particularly with the growing emphasis on integrated office computer systems, home-grown companies such as Siemens, Nixdorf, Klemm, Triumph-Adler and Olympia are actively pursuing wide-ranging operations.

Belgian, Thomson and Matra—which look likely to gain the bulk of the orders. And, more generally, the aim of course is to strengthen the hold of "computer culture" in France and narrow the country's gap compared with other leading Western nations.

The latest Government indications are that the schools plan, however, will exclude foreign companies at least from the initial batch of orders. So Apple and Sinclair—look likely to continue selling their equipment to schools and colleges via "back-door" rather than official routes (for instance, via parent teachers associations or discounting directly with schools).

Since then, however, interest has been further stimulated and sales have continued to grow, even though the professional market has been likened to a "Sleeping Beauty" waiting to be wakened by a prince's kiss.

West Germany's natural caution has been reinforced to some extent by all the uncertainties surrounding computer developments and the dazzling array of choices. Suppliers, it is often said, expect too much of purchasers. There are the familiar problems such as compatibility and complex instructions.

In their efforts to carve out a niche of the personal computer market, West German companies have faced intense competition. But, in fact,

prominent local companies have been showing more signs lately of pressing ahead on the personal computer front.

The merging of data processing and communications technologies has also presented companies with the challenge of widening the horizons of their operations or of filling in gaps in their computer systems spectrum.

Triumph-Adler, which has

gained about 5 per cent of the personal computer market in West Germany, is facing a particular test, with Volkswagen production anxious to eliminate the burden of losses at its subsidiary.

Its typewriter division has already been streamlined and modernised, and Herr Nadebusch, who previously headed VW's difficult operations in Nigeria, is hoping that the computer division, with its revamped Nuremberg production centre, will reach the point of profitability next year.

VW has already decided to have IBM/PC and Apple computer operations in the U.S. and to bring them under the successful Volkswagen of America umbrella.

Triumph-Adler is hoping to achieve higher volume sales of personal computers through tackling both product development and marketing. It envisages that the distribution and information centres being set up in major cities will provide guidance both to its traditional specialist dealers and to large customers.

## New models

With its Alphabetic series, Triumph-Adler notched up sales of 26,000 personal computers last year, compared with 15,000 in 1983. Its new models, the PC18 and the upper bracket PC80, are being produced in West Germany in readiness for launching on the local market.

The P50 model, recently introduced in Germany, will be launched abortively on the UK market.

As part of its efforts to strengthen its marketing, Triumph-Adler has already begun setting up its distribution and information centres, initially in Hamburg, Hanover and Nuremberg. It envisages having nine in major West German cities by the end of this year.

The company is setting up

the centres jointly with existing local distributors, but the respective stakes in the investment will vary from one centre to another.

Triumph-Adler decided to move in this direction after concluding that existing distribution and marketing arrangements were not wholly satisfactory, for example in providing the guidance and advice which is often necessary to win complex computer system business.

Herr Nadebusch is hoping that the turnaround will come not only from the new personal computers and strengthened distribution, but also from the new multifunctional System M office communications system now being introduced.

## Co-operation

Beyond these developments, Herr Nadebusch has also made clear that he is seeking to establish co-operation between Triumph-Adler and a communications specialist in view of the merging of the related technologies.

The forthcoming Hanover Fair is traditionally an occasion for companies to present new developments, and Nixdorf is again among those which have already given an indication of what can be expected.

Nixdorf is introducing an IBM PC/XT compatible personal computer, designated as 8810/85, which has been developed by Matsushita of Japan to the Paderborn-based company's specifications. Nixdorf says it is responding to the increasing demand from its clientele for IBM-compatible computer systems.

Another Nixdorf development to be shown at Hanover is the System-PC 8810/85 in the upper performance bracket.

Now, Telemobil and Novatronic has indicated a new emphasis in its strategy as a result of the merging of communications and computer technologies. On top of its traditional strength in communications, it is increasing its involvement in text and data processing. It will offer a microcomputer developed by Convergent Technologies of the U.S. as an integral part of office communications systems.

The move, however, is seen less as a step into the highly competitive market for stand-alone personal computers than as a means of maximising use of text and data communications systems.

## European market value

A summary of country shipments forecast for personal computers in the corporate market sector, 1984 to 1989, by value. The following values are expressed in \$m at constant end-1984 levels, on an "if sold" basis, and rounded to the nearest \$10,000.

Country	1984	1985	1986	1987	1988	1989	1985-9
Belgium	23.35	37.43	63.22	111.79	166.60	248.16	627.20
Denmark	16.82	23.87	41.61	70.90	102.28	148.22	386.88
France	144.56						



# The Olivetti Personal Computer

**“Significantly faster  
and more powerful than  
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PRACTICAL COMPUTING

Mr. Amazed

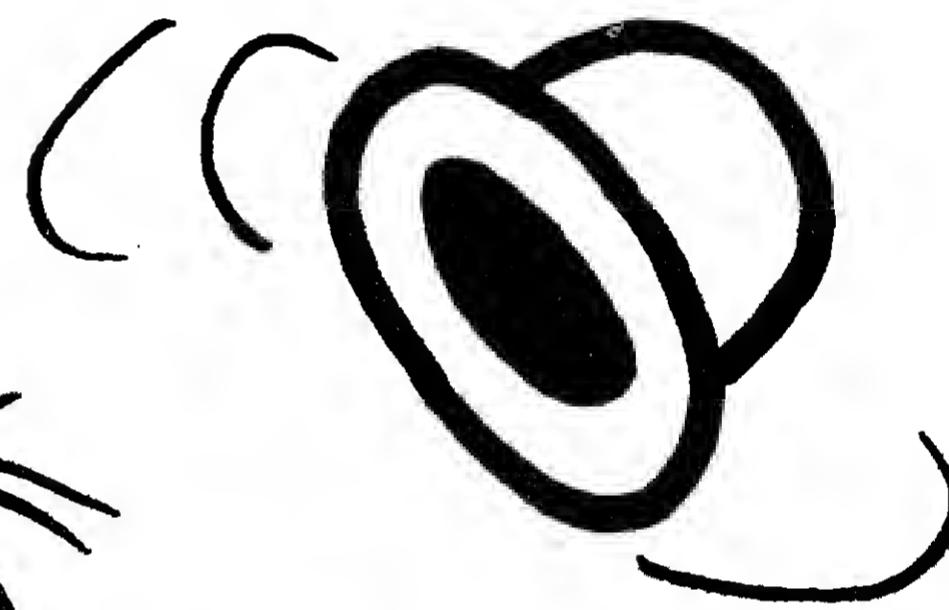


Like Mr Amazed you may be surprised at the speed and power of the Olivetti M24.

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The M24 is easily expandable, ready to cope with your business growth. And, because of its compatibility with IBM, it can use most of the popular software packages, so you can quickly have it working whatever your specific needs.

And if you want to work with your computer in different locations the M21 has almost identical features in transportable form. Of course, unlike Mr Amazed, you would not be so surprised, if you knew that Olivetti is Europe's number one company in office automation or that it has an



unrivalled record in technical innovation for the modern office.

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Postcode \_\_\_\_\_

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## Professional Personal Computers 8

Hardware technology: FT writers highlight the major advances and the impact on a fast-changing industry

### A race to produce tiny but rugged machines

THOSE WHO doubt the viability of the portable computer market may have to alter their opinions in a hurry this year if current speculation proves correct and IBM launches a briefcase-sized personal computer.

It would give an immediate legitimacy to a market which, despite enthusiastic forecasts from analysts (62 per cent of all personal computers will be portable by 1986, one says) and the success of companies like Compaq and Epson, has for many still to prove itself.

Compaq, for example, has shown dramatic growth, based on sales of a "luggable" suitcase-sized portable which it claims to be completely compatible with IBM's desk top Personal Computer (PC). It reported sales of \$323m in 1984.

That figure represented a 196 per cent increase over 1983, the company's first full year of operation. It claims to be the fastest startup success in U.S. business history and to be the number two world wide, in the 16-bit personal computer industry.

And although Compaq now manufactures a full range of desktop personal machines, its success was, and is, based on portable computers.

Many of the leading computer and electronics manufacturers have now launched what can broadly be called portable computers although that description covers a wide range of machine types.

At the weighty end there are the "luggables" machines like the ill-fated Osborne 1, the highly successful Compaq and IBM's own Portable PG.

Complete with video monitor, disc drives and transformer, they are simply too heavy and bulky to be carried comfortably in anything larger than the boot of a car.

The next category are described as "lap computers"; small enough to be carried in a briefcase, they are commonly distinguished by some form of flat screen display and battery operation. This group includes machines like the UK designed and built Husky Hunter, the Texas Instruments Pro-life and the Epson FX-8.

Then there are a variety of "pocketable" machines, from image on the screen and the

#### New portable computers

ALAN CANE

tiny computers, a little bigger than pocket calculators with rudimentary alphanumeric keyboards making it possible to program them in Basic, to the remarkably sophisticated Hewlett Packard programmable calculators and the "Pison Organiser," a pocket computer designed to store, for example, lists of names and addresses or carry out financial calculations.

The chief thrust in portable personal computer design today is to achieve the right mix of portability, power and functionality.

Luggables like the Compaq have all the power and functionality of an orthodox desktop computer, but they fall short on what most people understand by portable.

Lap computers are much closer to that ideal but frequently disappoint on power or capability.

The Data General One, for example, a very powerful IBM compatible lap computer broke through one barrier last year with a flat liquid crystal screen displaying 25 lines of 80 characters—the size of a conventional IBM PG screen.

#### Requirements

Users, however, were not impressed with the quality of the "pocketable" machines, from image on the screen and the

DG One has not been the success the company hoped.

As Mr Dan Terpock, general manager of Hewlett Packard's portable computer division, has said: "A portable computer has got to be powerful and it has to be a full function personal computer. If you make compromises you are going to be in trouble."

"The machine should be small, light and it should run off batteries. It should be very reliable and very rugged. It should carry its own electronic documentation."

"It is silly to have a very small portable product weighing less than 10 lb and carry 12 lb of documentation around with you to be able to understand how to use it. And because many computer applications really relate to accessing other sources of information, inherent communication capabilities in the machine are very important."

So manufacturers are aiming for a tiny, rugged machine with all the functionality of a full-sized desk-top computer. The chief problem until now has been the screen. Conventional cathode ray tubes are cheap and efficient for desk-top machines, but impossible to fit in a portable.

The simplest and cheapest solution to date has been to use liquid crystal technology. Japanese companies, such as Hitachi and Panasonic, are well advanced in this technology and it was their research and development which led to the 25 lines by 80 character screen featured in the Data General One.

But, as Data General and its prospective customers discovered, a large liquid crystal screen has all the defects of the small displays used on machines such as the Epson FX-8, the Hewlett Packard Portable and the Tandy 100 and 200.

The characters are difficult to see in poor light (liquid crystal displays become clearer as the incident light becomes stronger)



Data General's personal computer now has an improved version of the liquid crystal display screen plus a new tilt mechanism

and the viewing angle is critical.

#### Solutions

Almost any technological problem can, of course, be solved at a price. Grid, a U.S.-based pioneer of portable computers, solved the problem through the use of an electro-luminescent flat panel display consisting of a matrix of 320 by 240 picture elements (pixels), each represented by a single binary digit in the computer's memory.

This approach gives extremely fine control of the screen image as each individual pixel can be turned "on" or "off" by the processor—it makes it simpler for Grid to combine text and graphics on the same screen.

The resulting image is sharp and clear, every hit as good as that generated by a cathode ray tube. But the Grid Compass costs almost £3,000, well out of the range of portables like the Hewlett Packard 128, the Epson FX-8, the Hewlett Packard Portable and the Tandy 100 and 200.

So Grid has sold well to the military, to security operations and to field engineers (as Husky, which makes a very rugged machine, does in the UK) but in comparatively small numbers to the business community.

In the past few days, Grid has launched a new family of machines, GridCase, to strengthen its hand in this crucial area.

The new machines are as compatible with the IBM PC as is the Compaq portable and have a built-in 3.5 inch microfloppy disk drive.

They feature "plug-in software," software written into read-only memory chips which can be plugged into sockets to give instant access to the programs they contain, and they run on rechargeable batteries.

Earlier Grid machines were mains powered because of the requirements of the electroluminescent screen.

The new machines feature three screen options—a grey liquid crystal, a yellow liquid crystal, and a red gas plasma.

All are 80 characters by 25 lines. GridCase is still significantly more expensive than most of the lap portables available now. The starting price is around \$2,975, top-of-the-range, and with the plasma display it is over \$6,000.

It remains to be seen whether customers will be prepared to pay these prices for the functionality that Grid undoubtedly offers.

And if IBM does offer its own version of lap portability in the next few months, it will be fascinating to see how IBM resolves these critical dilemmas in portable computing.

#### Advances in printers

GEOFFREY CHARLISH

AFTER a number of years in which the laser printer has been seen as a high cost, high volume product for large computer installations, the technology is coming down market and is already upsetting established manufacturers' positions in the U.S.

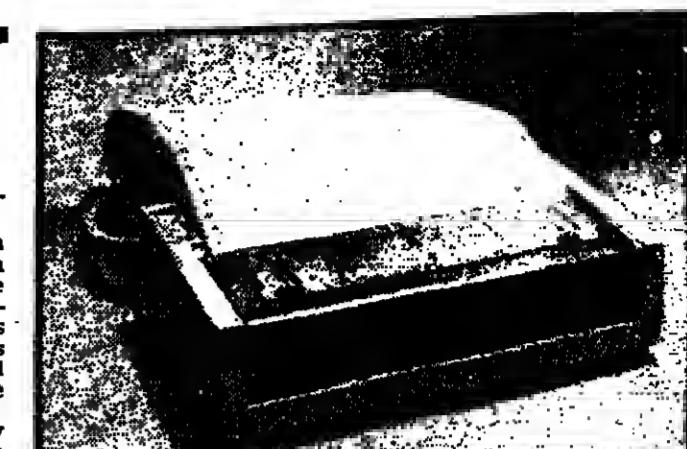
Until recently the tendency has been to think of printers in "pages for hours" terms—high speed, line-at-a-time machines for the conventional computing room, dot matrix for office printing, daisy wheel for producing letters and executive documents in word processing.

But the fact is that the laser printer and its derivative, the light emitting diode (LED) machine, if they can be produced and sold at an acceptable price, can offer office automation users all the advantages of the other types in one machine—speed, letter quality text, graphics, reliability and of increasing importance in the modern office, quietness.

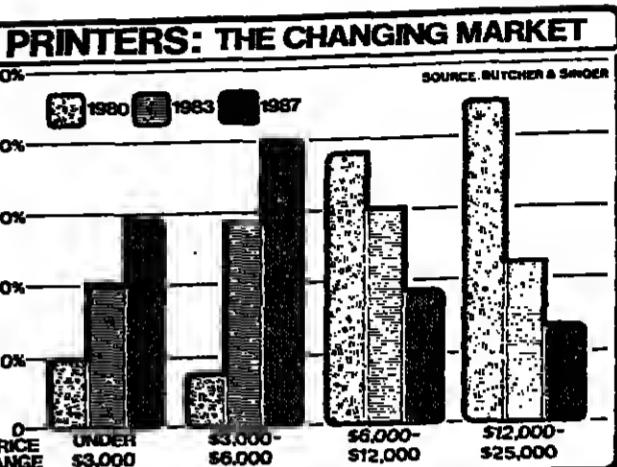
Furthermore, this desirable combination of attributes nicely matches the trend towards office automation systems which, by definition, have to handle any kind of work quickly and quietly, be it text, data or graphics, or a combination of all three.

However, according to New York stockbrokers Butcher and Singer, the U.S. printer companies, until recently dominant in the market, have been caught napping.

Because they have no hock-



Hewlett-Packard's Think Jet printer



have no moving parts except for the drum. The LED array is manufactured in short length chips which are joined together to give a page-wide bar. The system lends itself well to mass production.

The later stages of the laser/LED technique have much in common with photocopying, which is why the Japanese, who have scooped the copier market, now seem set to do the same with low cost light-based print mechanisms.

Oki Electric, Ricoh, Canon and Sanyo, for example, offer systems while in Europe, Agfa is known to have developed a machine.

A major printer announcement few weeks ago came from Apple Computer. Called LaserWriter, it is based on the 300 dots per inch Canon mechanism, a built-in Apple microcomputer and some software called Postscript.

It is companies with a background in copiers—which are technically similar to photocopying, which is why the Japanese, who have scooped the copier market, now seem set to do the same with low cost light-based print mechanisms.

Oki Electric, Ricoh, Canon and Sanyo, for example, offer systems while in Europe, Agfa is known to have developed a machine.

Both Epson and Casio have developed systems employing liquid crystals. Use is made of the same kind of light shut-off effect as in electronic watches, except that switching between "light" and "dark" is some 200 times faster. After a short time, the drum/tone/sealing process is similar to LED systems.

Casio says the technology will allow pages of text or graphics to be produced at speeds three to eight times faster than those of dot matrix machines.

It is possible that 1985 will be the year in which, for new PC users, a major shift will occur from conventional impact printing to the new, quiet and reasonably priced systems able to cope equally well with text, data, or graphics.

It is a new art that conventional printer companies will have to master if they have not already done so. Not only are there new hardware technologies to acquire; software control techniques that deals with the printing variability also has to be mastered.

Office integration could turn out to be more important than some printer makers think, say Butcher and Singer.

"Without integration," says the research director, Nicholas Pagan, "the laser printer would be viewed simply as a new printer technology that depends on price/performance parity with the older technologies to succeed. But we believe strongly that integration is an important issue and one that brings new market demands."

For that reason alone, the more costly laser printers are likely to drop in price as volume builds; there are other technologies in the offing.

All this is causing the present band of conventional printer makers—dot matrix and daisywheel in the main—to think again about prices.

For the user, the options are widening. Apart from the LED and ink jet types, which are likely to drop in price as volume builds, there are other technologies in the offing.

The recent appointment of the so-called "father" of the IBM personal computer line, Philip Estridge, to IBM headquarters in Armonk, is an indication of how seriously IBM takes the PC nowadays. Estridge headed up IBM's PC development team in Boca Raton, Florida, under a unique business structure for IBM.

The PC development was accomplished under a special scheme which allowed the unit to operate autonomously. This could be one explanation for the openness of the PC design.

There are also some unusual additions to the PC. The UK company, Penman Products, has developed a robotic drawing implement. The Penman device can be laid on a piece of paper and instructed to draw designs or graphics by the PC. The Penman is also available for the BBC and £300 and will no doubt find a market in specialist applications.

This, of course, need not be bad news for independent suppliers, provided they keep up with IBM and keep plugging the gaps it, necessarily, leaves behind.

Since the launch of the IBM Personal Computer a massive "add-on" industry has developed for specialist products to plug into the machine.

### Fresh challenges in disk memory market

#### Variety of memory systems

ELAINE WILLIAMS

ONE OF the important criteria upon which companies choose microcomputers is that of memory capacity. Clearly, the bigger the memory, the greater the potential application for the equipment.

Microcomputer memories come in more than one variety.

The market for floppy disks is a volatile one, with an increasing number of competitors.

Companies such as Kodak, better known for its photographic products, have entered the field.

Other major competitors include 3M, Verbatim and Wabash.

Early in March, Rhone-Poulenc Systems, one of the world's leading computer media companies, which produces materials for magnetic storage, took a major interest in Brown Disk, the floppy disk manufacturing subsidiary of Dysan Corporation in the U.S.

RPS is a leading manufacturer of computer tapes in Europe. Brown Disk, based in Colorado Springs, was set up only four years ago and has projected sales for this year of about \$1m.

RPS has risen quickly in its home market in France. It now has an estimated 20 per cent of the French market and hopes that the acquisition of the American company will give it

a strong foothold in the U.S. where Brown Disk is reckoned to have 50 per cent of the market for the new generation of high density floppy disks.

The agreement with Dysan, which is merging with Xidex, another U.S. corporation—also covers the purchase of another Dysan subsidiary, DYPY, a specialist European floppy and rigid disk-maker.

RPS is planning to double its annual production capacity for next year, in line with forecasts of an increase in the world computer consumables market of more than 400 per cent in the next three years.

Whether or not there is a slowing in personal computer sales, there will still be an increasing demand for disk memory. The 5½ in disks are being

challenged by under 4 in versions for the compact, portable and small desktop machines.

Sony, the developers of a 3½ in floppy disk which is protected in a rigid shell, claims that it has about 90 per cent of the market for under 4 in disks. Sales are growing at a rate of about 50 per cent a year.

Sony, which introduced its disk about two years ago, hoped then that its version would become the de facto standard against three proposed disk types from Maxell, IBM and Dysan. The advantage of such personal computers is in their small size which have the ability to store as much information as the larger types.

Sony now dominates this embryonic but rapidly growing market. It says that it is winning 75 per cent of the new business for under 4 in disks. Already Bawalt Packard, Apple and Dysan have joined forces to produce a 3½ in floppy disk which is protected in a rigid shell. The 3½ in floppy disk is being adopted by the new generation of personal computers.

Usually, "hard disk" drives and tape streamer back-up devices fall into this category. The board is used to control the device as additional programming is needed with most add-on devices.

#### Applications

The ATP 20 tape streamer, used for backing up high capacity hard disks, can be used with IBM PCs—the XT, the AT and with any of the three major PC itself—and comes with an appropriate interface card to suit the specific computer.

A key area is communications. A number of companies provide plug-in boards to enable the PC to communicate via modems to other computers and networked services.

The so-called Irma board has been adapted by a number of software firms, for instance, to provide terminals emulations for well known mainframe communications terminals. This has enabled the PC to replace the traditionally expensive terminal as well as providing local computer power to users.

Another major area is in graphics where companies offer a substitute board to the ones that IBM provides—often much cheaper and providing more function. The Mytex Corporation, for example, will provide a combined colour and monochrome graphics card where IBM will only provide them at

separate (and very expensive) options.

The above products just involve plugging a card into the PC, but there are other products that require a card and an external "box" of some kind.

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Despite all of this activity

## Falling orders worry chip-makers

WHAT does the semiconductor industry have up its sleeve for personal computers? New microprocessors? New memory chips? New controller chips? New packaging?

All of the above, the chip-makers reply. Overwhelmingly, however, semiconductor companies are more concerned about the lack of personal computer orders for current products than they are about providing parts for the next generation of personal computers.

For semiconductor manufacturers, personal computers have been a mixed blessing. What looked like a golden opportunity two or three years ago was turned into a lead weight, dragging chip-makers' revenues down into a steep recession.

The explosive growth of the personal computer market gave chip-makers a major boost in 1983, when they were struggling to find orders. Personal computers joined the semiconductor industry out of a two-year recession. Companies such as Intel and Advanced Micro Devices that make the microprocessors and peripheral chips used in IBM and IBM-compatible computers, benefited greatly from surging demand for their products.

### Major factor

In 1983-84, personal computers accounted for approximately 20 per cent of all semiconductor purchases. This new market for chips was a major factor in creating a record 50 per cent growth in the U.S. semiconductor market last year.

With their excess demands for certain types of products, the PC-makers created shortages. Since then, this has had an effect of accelerating semiconductor order growth. Chip customers from other sectors of the electronics industry placed huge orders to ensure their supplies.

Then the bubble burst. Per-

### Semiconductor manufacturers

LOUISE KEHOE

semiconductor sales growth slowed down. A number of personal computer companies failed. Others pulled out of the market. With them went the chip orders.

The impact upon semiconductor manufacturers has, however, spread far beyond the cancellations and order cancellations of the personal computer industry. There has been a domino effect throughout the entire electronics industry. As systems manufacturers realise that chip shortages no longer exist, they, too, have cancelled orders. Inventories, stockpiled during the days of shortages, have not been replaced. Chip orders have spiralled downward at an alarming rate.

As semiconductor makers count their losses, there is a growing appreciation in the industry that the personal computer — just like the video game and the digital watch — is susceptible to the fickle fancies of the consumer. The personal computer will not fade away like previous consumer electronics products, but until the market settles into a steady growth rate it will continue to disrupt semi-conductor supplies, the chipmakers believe.

Novel man-machine interfaces include voice input and output devices.

## Search goes on for new speech response systems

### Interface devices

ELAINE WILLIAMS

DESPITE the computer industry's oft-quoted description of its products as "user-friendly," many first-time operators are deterred from applying personal machines by an unfamiliar computer keyboard.

Though computer education in schools will obviate the problem in the long-term as children are already conversant with the keyboard — unlike their parents — computer manufacturers realised that they must allow people to use computers without necessarily using the keyboard to input information.

The early solution to this problem was a hand-held input device, called the "mouse," such as is found on the Apple Lisa, and Macintosh and Xerox's Star computers. Microsoft was one of the first companies to develop the mouse concept. The input device is connected to the computer: its movements are copied by a cursor on the screen. This allows the user to move the cursor to all parts of the display, selecting options, presented by the operator on the screen, or building up graphic pictures, for example. Normally, the user is presented with a set of options on one part of the screen.

For word processing applications, for instance, this could be commands such as delete, insert or move. The rest of the screen could be taken up by the text itself. By moving the cursor — by moving the mouse — to the command area of the screen and then to the text, the user can edit a document without having to operate any of the keys on the main keyboard.

### Graphics tablet

For more specialist applications, such as computer-aided design, a more complex version of the mouse is used in conjunction with a piece of equipment called the graphics tablet. In this case, instead of moving the mouse on an ordinary table, it is moved on a pad called a tablet. Along the edge of the tablet are the commands and, as before, the mouse is moved between the command portion and the working space which is used to draw images on the screen.

Sometimes a light pen is used, instead of the mouse. Again, the user can either use a tablet or draw directly on to the screen with the lightpen.

Hewlett Packard's touch screen is another way of entering information without using extra equipment. With the touch screen, the user simply points at symbols on the screen which offer a number of options. The hub of such systems is good software which presents the user with sophisticated systems in a simple way.

The ability to communicate with a computer using human speech is considered to be the

In the current circumstances, it is hardly surprising that chip-makers are not enthusiastic about developing new products for the personal computer market.

To the question: what does the semiconductor industry have to offer PC-makers in the future? The answer is com-

monly a derivative snort: "Inventory," responded one of the largest U.S. chip-makers.

New chip product development began during the sunshiny days of the personal computer market boom, are however starting to reach the market. Several technology trends are emerging:

- A move toward customised chips for personal computers.
- Microprocessors that incorporate "peripheral" functions, such as memory management.
- Faster memory chips.
- Complementary metal oxide semiconductor (CMOS) devices.
- New packaging.

The move to custom chips for use in microprocessors is already apparent in such soon-to-be-introduced personal computers as Commodore's Amiga which includes its own graphics controllers.

The trend toward standard operating systems, such as MSDOS and UNIX, brings with it a problem for personal computer manufacturers. How can they differentiate their products? The answer seems to be in the use of custom chips.

The semiconductor industry

has made custom chips economically viable for use in low-cost products through the development of "semi-custom" design methods such as the cell libraries now offered by several companies which allow the relatively quick and inexpensive design of custom chips.

Industry experts expect personal computer-makers to take full advantage of semi-custom chip design methods to create unique products.

### Performance

The key element of a new generation of personal computers is, however, the microprocessor. At the moment, Intel's 8086 is the heart of the IBM PC and all of the "clones" of that machine. The Intel 286 is used in IBM's PC AT. Texas Instruments and Kaypro are the first companies to offer compatible machines using the same microprocessor chip. Many others are expected to follow.

Toward the end of this year, Intel is expected to introduce the "386," a super high performance 32-bit microprocessor that can be expected to provide the brain-power to personal computers coming on the market in 1987-88.

The "386" has at least twice the speed and power of the current "286," but remains fully compatible with today's products. The "386" will be built using CMOS technology so that it will use less power than today's micropro-

cessors.

Other important Intel chips that are expected in the coming months include a product called the 8088 which is a highly integrated 16-bit microprocessor. Details are sketchy, but Intel's enthusiasm for CMOS would suggest that the 8088 will also be a low-power part. Functions generally performed by peripheral devices will be condensed onto a single chip.

Intel is also working on its own graphics co-processor to be called the 82786. This will be a device that will produce high-resolution graphics on personal computers and computers used in, for example, computer-aided design systems.

Meanwhile, Motorola has

already announced a high per-

formance full 32-bit processor called the 68020. The chip has been designed into some high performance microcomputers but is yet to reach the personal computer market. A drawback of the 68020 is that it is not fully compatible with earlier 68000 family processors.

Hitachi is, however, expected

to address this issue by launching its own 32-bit 68000 compa-

table microprocessor soon.

Faster microprocessors re-

quire a super-speedy memory

chip to keep up with them. The semiconductor industry plans to oblige with a new generation of dynamic RAMS (rapid access memory systems) — the chips that store data in a personal computer until it is safely filed

away on a disk.

Dynamic RAMS used to come

in one "vanilla flavour."

Over

the past two years, however,

they have developed

special versions of dynamic

RAMS optimised for use with

microprocessors.

These memory chips store

"words" (strings of data bits)

read by microprocessors. The

traditional array architecture of

the dynamic RAM is being

changed to suit the micro-

processors.

Both memory and micropro-

cessor chips are increasingly

being made using low-power

CMOS technology.

assumed, the personal computer

market will be ready to take

advantage of its low-power

requirements.

Another aspect of chip tech-

nology that will be important

for personal computers

is the trend toward "surface

mounted devices."

These are

chips that can be bonded

directly on to a circuit board.

They take up less space and

are more easily handled by

automated equipment than

traditionally packaged chips.

With surface-mounted chips,

personal computers will become

smaller, with higher memory

capacity.

CMOS will, however, be the

dominant semiconductor tech-

nology for the next several

years and eventually, it can be

assumed

it "two to three times faster than the IBM PC."

CMOS (complementary metal oxide semiconductor) technology.

Chip-makers used to boast

about how useful CMOS chips

would be in portable computers.

The low power requirements of

the chips would mean longer

battery life, they pointed out.

These days, with the portable

computer market failing to

materialise as a major segment

of personal computers, less

emphasis is placed on portability.

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## Professional Personal Computers 10

Alan Cane explains why systems software options have become so important

# The operating system dilemma

MOST of the excitement in personal computers today is about very recent developments—the launch by Motorola and Intel of the latest generation of microprocessor chips, for example, or the appearance of a new kind of display.

In the systems software world, however, the hottest topic is Unix, an operating system for minicomputers and microcomputers that is now almost 30 years old.

Developed by Kenneth Thompson and Dennis Ritchie at AT & T's Bell Laboratories it languished virtually unnoticed except by the computing cognoscenti until with the advent of today's very powerful machines (16 bits and more) it took on a new lease of life.

First, a word about operating systems: computers carry out tasks automatically because of sets of instructions (programs) stored in their memories which they obey in sequence, one after the other.

Specific tasks—running a spreadsheet, for example, or carrying out a complex calculation—are ordered by applications programs.

But computers are complex beasts with many component parts which have to be synchronised properly if they are to execute applications programs efficiently.

Decisions must be taken, for example, about how to allocate blocks of information to specific areas of memory. There has to be some way of deciding how to use the computer's disk memory and how to feed information to printers or other peripherals.

## Decisions

The operating system takes responsibility for these decisions, allocating the resources of the computer in the best possible way. Operating systems are large and complex programs and they are important for two principal reasons.

• First, an applications program will only run effectively if it is allowed to be the operating system, so there is a continual search for operating systems which use the resources of the computer to their best ability.

• Second, an operating system can be a powerful force for standardisation and therefore progress.

Early personal computers were really only of interest to the enthusiast until a young Intel engineer, Gary Kildall, developed an operating system, CP/M, which made it possible for these eight-bit machines to

## A new lease of life for Unix

support disks and therefore business software.

Mr Kildall left Intel to form his own systems software company Digital Research. CP/M became the dominant operating system for the eight-bit personal computers and thousands of business programs were written for CP/M machines.

Software authors had the confidence to write applications programs to run under CP/M because they knew that their work would be available on a wide range of machines.

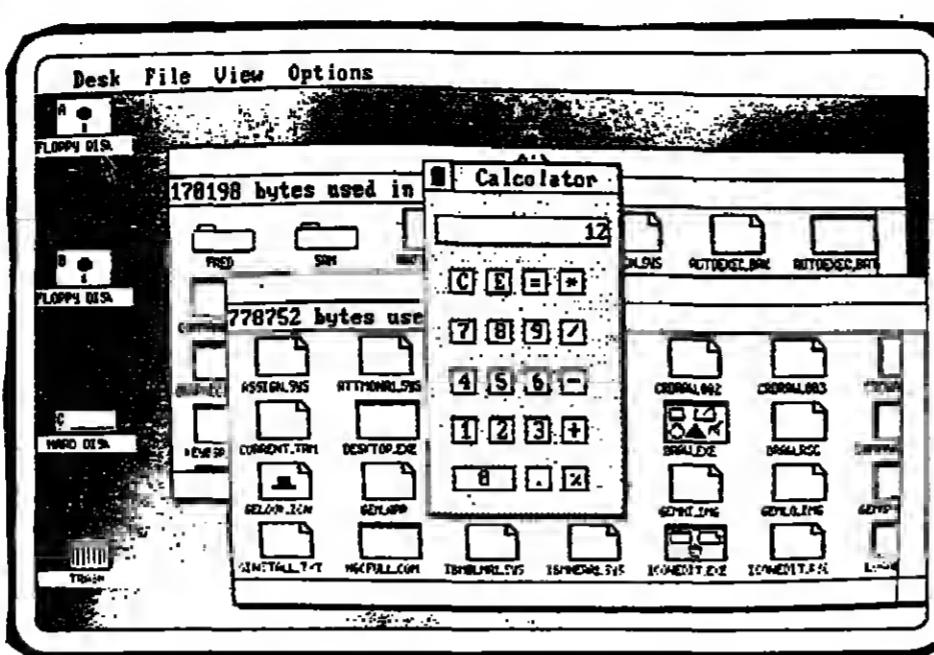
IBM introduced its Personal Computer in 1981 with a new operating system, PS/DOS written by Microsoft. PC/DOS was a version of Microsoft's own MS/DOS product, tailored for the IBM PC. It was designed to exploit the power of the Intel 8088 microprocessor chip which was used in its original PC, a chip which was half way between an eight-bit processor and a true 16-bit processor.

The IBM PC quickly became the industry standard and thousands of application programs were written for PC/DOS and MS/DOS.

At the same time, Digital Research had developed a 16-bit version of CP/M, CP/M 86, and an operating system which allowed the computer to carry out up to four tasks simultaneously—one task does not have to be completed before the next starts—which means that a user could be running a spreadsheet package while the system was listing the output of a quite separate program.

The emergence of a new and significantly more powerful breed of chips, the Motorola 68000, the Intel 8086 and 80286, Zilog Z8000, National Semiconductor 3200 and Western Electric WE32000, changed the picture significantly.

There was a dearth of operating systems which could make the best use of the power of these chips not only for multitasking, but for networking.



The calculator (above) by Digital Research is an example of GEM Desktop software

Most industry observers agree that while there is little future in operating a number of terminals from a single microcomputer—(multiple access computing) the importance of networking one microcomputer to another cannot be over-emphasised.

The Digitus study says that Unix is now "off the ground and rising quickly" because of:

1—AT & T's direct entry into the personal computer market place and its commitment to support Unix and Unix optimised hardware.

2—Olivetti's commercial links with AT & T in the U.S. and Europe.

3—Statements of direction supporting Unix from IBM.

The formation of a European club of established manufacturers, ICL, Nixdorf, Philips, Siemens, Bull and Olivetti to support Unix, to attract Unix-based software and to sell Unix systems.

5—The adoption of Unix by every major independent semiconductor manufacturer for both their 16 bit and 32 bit offerings.

6—The fact that over £100m has already been invested and that investment is rising in creating software that runs under Unix.

7—The substantial numbers of graduates from computer science departments who are already trained in Unix.

In January this year, Micro

soft and AT & T announced plans to offer compatible future releases of Xenix (Microsoft's own version of Unix built under licence) and Unix System V (the most modern version of Unix).

## Significance

In other words, Microsoft and AT & T are working together on what they hope will be the definitive version of Unix. "The real significance of System V," says Digitus, "is not so much the Unix itself, but in the fact that AT & T is promoting a common standard and other suppliers are beginning to follow it."

Some argue that Unix, good as it is, hardly warrants this treatment but Digitus disagrees.

Its report says: "There is no such thing as 'best'; there is only 'most suited' for the purpose from the selection available."

In this regard, Unix can be compared on one scale to MS/DOS as the operating system in the right place at the right time backed by the major computer, communications, semiconductor and software companies.

"On another scale, it can be compared to a minicomputer operating system like DEC's RSTS which it has already out-sold in the UK."

In this regard, Unix can be compared on one scale to MS/DOS as the operating system in the right place at the right time backed by the major computer, communications, semiconductor and software companies.

"On another scale, it can be compared to a minicomputer operating system like DEC's RSTS which it has already out-sold in the UK."

FINE MALT whisky takes a long time maturing before it can be drunk, and many a perceptive drinker will bless the years it spends in the cask. But planning supplies 10 or 12 years ahead can be a headache for Mr George Jenkins, financial director of William Grant and Sons, which produces the well-known Glenfiddich malt whisky.

"We are distilling today for bottling and sales in 1996—after I have retired," says Mr Jenkins.

Forecasting future sales and

planning production and stocks around the forecasts seems rather like necromancy when you are trying to look that far ahead, and Mr Jenkins says that over-optimism has, in the past, been compounded by recession for the whisky industry. But for a family-owned company like Grant, cash flow must be tightly controlled, so Mr Jenkins has introduced a three-year plan.

The plan has not been adopted by all, but it could take months just to gather all the figures from different departments. Although Grant already had an IBM 4300 mainframe to handle accounting and export marketing functions, this was not felt to be flexible enough for the three-year plan.

In 1983 the task was handed

over to a computer service bureau.

There was trouble from the start.

"We were the smallest company using the system, but we had the largest model," recalls Mr Jenkins. Above all, the process of working with a remote bureau was cumbersome and expensive.

## Ingredients

The solution was MSA's PC

Software, used with an IBM PC. The £4,500 package includes graphics, word-processing, mailing list and telecommunications functions. But from Grant's point of view, the main ingredients were a link to the mainframe computer called ExperLink and the MSA PC Spreadsheet.

The system allows Mr Jenkins to draw information quickly and simply from the main computer and insert it into his model—matrix of 250 rows by 40 columns, with sub-models representing the separate business areas.

He can break down costs, sales and profits for each of Grant's distilleries, or for different market areas, as well as predict the effect that various

decisions would have on his cash flow and profits. This helps him keep much tighter control of borrowing.

Mr Terry Gorman, Grant's data processing manager, says that the planning model alone would have justified the cost of the personal computer and the MSA PC Software. In fact, they have been used for much more, and the company now has two PCs at its Paisley headquarters, one at its Girvan depot and one at its London sales office.

Indeed, the PC is now used in one of Grant's production systems—using the PC as a link to convert data from the microprocessor running production at one of the distilleries into a form that the head office mainframe computer can handle.

## Acceptance

Mr Gorman sees the ability to load information directly from the main computer as crucial in winning acceptance of the PC within the company—“if people have to key data into the PC, they won't use it,” he says. Instead, managers are “queueing up from the crack of dawn” to run their programs on the PC.

William Grant first moved into the personal computer field with the expectation “only of breaking even”—“our manual procedures had always been very good,” says Mr Jenkins, “but I could see that we were going to fall behind our competitors if we did not get our feet wet.”

Now, he finds that the PC has given him much greater access to information at virtually no cost. Using the planning model, Mr Jenkins can watch not only his own company borrowing more closely and spot early danger signs; he also believes it gives him “more of a gut feel for the market” and helps him to identify trends in the whole whisky industry.

GEORGE GRAHAM

## Does it matter who you rent your micro from?



Britain's ICL has designed the One Per Desk (OPD) which provides the individual manager with a combination of the most popular facilities of a personal computer, an advanced push-button telephone, data communications and messaging.

Source: Frost and Sullivan, 1985.

London computer dealers. “We take the view that the customer does not always know best.”

## Consultants

Many small businessmen find consultancy fees hard to justify since the benefits are hard to measure. Mr Doug Eyelton, secretary general of the Computing Services Association, says: “The first-time user generally does not understand why he needs to splash out all that money to pay for someone to make his decisions for him, especially when he thinks he can get it free from computer magazines or from talking to a salesman.”

One common observation among many first-time buyers is that first-time business computer buyers should get consultancy advice before they embark on a purchase. Such advice is expensive—a basic four-day programme with Arthur Young costs £500 and consultancy fees generally vary from £40 to £100 per hour—but the consequences of making the wrong choice can be even more costly.

Trade surveys suggest that £80m a year is wasted on the purchase of useless equipment and it is not hard to find examples of small companies that went bankrupt at least partly because they bought a system which they failed to understand or which proved unsuitable for their specific needs.

The system was installed at the turn of this year, but is not yet fully running because HM&S is taking the elementary precaution of computerising in easy-to-manage stages.

The risk is that they buy some cheap and nasty system which destroys all the data they have created for it,” says Alan Wood, managing director of Digitus, one of the larger

problems. Mr Clive Leyland, principal in charge of accountants Arthur Andersen's Microguide advisory service, says: “Many people approach us because they have lost operational control of their business and see a micro as a relatively cheap way of getting it back.”

A micro will do more than automate the information already available—and if a manager has already lost control of his information, a computer will only hasten that company's decline. Says Mr Leyland: “The financial implications of that process, while unquantified, can be enormous.”

WILLIAM DAWKINS

## The top six suppliers

EUROPE saw an 85 per cent rise in sales of office automation systems in 1984, totalling \$2bn worth of equipment, according to a recent survey by Wharton Information Systems.

Sales of personal computers for the office reached the £1,000m mark with a 74 per cent increase on 1983's figure. The top six suppliers of personal computers, accounting for 74 per cent of the market, were:

IBM ..... 25  
Apple ..... 13  
Triumph Adler ..... 12  
ACT ..... 10  
DEC ..... 8  
Olivetti ..... 6

Wharton Information Systems, 12, Eton Street, Richmond, Surrey TW9 1EE (telephone 01-731 7366).

CCA MICRO RENTALS LIMITED  
Unit 7/8, Imperial Studios,  
Imperial Road, Richmond,  
London SW6 2AG.  
Telephone: 01-731 4310

FT



The AT & T UNIX PC (left): easy to use with menu-and-window displays to guide the user and an electronic "mouse" that can often be used instead of the keyboard. Right: the Sirius 1 personal computer from ACT, UK

Case study: how a personal computer software package has proved to be a valuable aid in industrial production and sales forecasting

## More information at virtually no cost

### Changes in computer purchasing-decisions

THE ADVENT of the personal professional computer is bringing with it a significant change in buying-decisions within larger companies.

When the computer market was dominated by mainframes, companies only felt safe if the decision to buy rested firmly in the hands of a technological wizard, but that is all changing with the micro revolution.

In Britain, which has the largest market for personal computers in Europe, a new survey shows that purchasing responsibilities for microcomputers and word processors are now comparatively diffused within companies, with four job groups (directors and partners; financial directors, accountants and company secretaries; financial and company secretaries; play the pre-eminent role, with 38 per cent saying that they are consulted at this stage.

• Fourth: authorisation. Again, financial directors, accountants and company secretaries take the most active part, with 21 per cent claiming that they give the final go-ahead to buy. Directors and partners come second at 18 per cent; purchasing and management services are third at 13 per cent, while office managers are fourth at 5 per cent.

The buying procedure is usually in four stages:

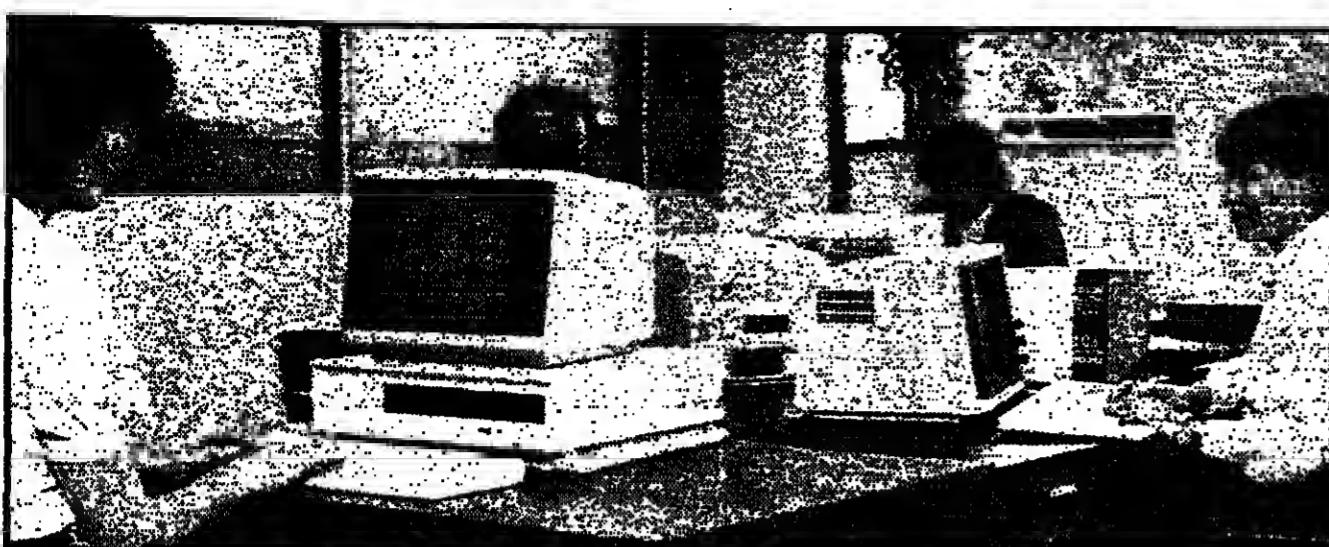
- First: initiation. Purchasing and management services are most likely to be the ones to start the ball rolling (33 per cent according to the survey). However, the three other groups show a significantly high level of involvement, with a mere 3 per cent variation of responsi-

MICHAEL WILTSHIRE

### Market Values by Products

Product type	1984	1985	1986	1987	1988	1989	1985-89
STAND ALONE							
Software	453.39	570.15	639.25	651.95	618.25	582.71	3,063.41
Hardware	146.26	272.29	479.52	699.89	770.26	827.78	3,055.74
Total value	599.65	848.44	1,118.87	1,351.84	1,388.51	1,411.49	8,119.15
NETWORKED							
Hardware	41.68	94.58	316.80	921.24	1,701.00	2,730.05	5,765.75
Software	8.53	22.18	169.29	566.96	1,299.38	2,320.00	4,616.82
Total value	50.81	126.76	486.00	1,519.40	3,006.38	5,250.03	10,382.57
PORTABLE							
Hardware	82.						

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## European market forecasts

Product type	1984	1985	1986	1987	1988	1989	1988-89
Stand alone	97.59	125.76	160.25	192.75	202.76	212.23	310.70
Networked	7.75	19.50	72.00	222.50	472.50	840.00	1,637.75
Portable	36.00	61.05	126.50	195.25	310.25	423.25	1,107.50
Total units (thousands)	135.25	216.30	366.85	620.75	976.45	1,475.50	3,685.85

Source: Frost and Sullivan, 1985.

## Major shift of power

## Networking systems

PHILIP MANCHESTER

JOHN McINTYRE, the man who launched IBM's personal computer in the UK, commented at a recent conference that more microcomputer "power" will be sold this year in the U.S. than mainframe computer power.

"By 1987 the installed base of microcomputer power will exceed that of mainframes," he added.

In simple terms this means that more of the computing done in the U.S. will be done using personal computers than on the larger, more established mainframe computers. Europe and the rest of the world will be close behind.

This enormous and unprecedented shift of computer power from the realm of the expert to that of the so-called end-user will not be without its problems. Paul Bailey of the software specialist company, Digital Research, highlights two major problems as a result of this movement.

"With the number of micros growing at between 30 per cent and 40 per cent a year there are two major developments that we must stay on top of—usability and networking," Mr. Bailey explained.

By usability, he means making the micro accessible to people with little or no computer training—a good example would be the typical office worker who has been earmarked as a prime target for personal computing. But just making a computer easier to use is not going to be enough; offices are centres of team work and isolated personal computers are of only limited use in such an environment.

This is where networking comes into the picture.

The concept of the network has been around for some years and makes the personal computer by far as much as available. But the cheapness and availability of personal computers has given added impetus to networking.

Furthermore, it has exposed an inherent lack of standardisation in the computer industry. In essence, networking means plugging computers together so that they can "talk" to each other, as well as sharing resources.

A classic application of a network in office automation would be where a number of personal computer users wanted to make use of an expensive high quality printer or a large capacity disc drive.

As individual users of personal computing, the cost of such devices could not be justified. But if they can all share them through a network, it will become feasible.

The lack of a standard method of attaching personal computers and the expensive shared devices to a network has proven to be a difficult obstacle to overcome, however. This is an inheritance from the traditional data processing industry where manufacturers were keen to lock customers into buying only their equipment. Even now, it is much easier—though, perhaps, less desirable—for a customer to stick to a single equipment and software supplier.

At the beginning of the 1980s the International Standards Organisation (ISO) attempted to establish some sort of order by setting out a comprehensive structure for networking standards.

Known as the Open System Interconnection (OSI) standard, it laid down a series of layers which specify standards for connecting everything from telephone systems to personal computers. But the idea of central control still lingers on and this does sit easily alongside the current trend to get personal computers to talk to each other.

The lack of an accepted networking standard has so concerned UK manufacturers of microcomputers that they have recently taken their own initiative in a crucial area of personal computer networking—local area networks.

Last month the UK industry body, the British Microcomputer Manufacturers' Group (BMMG), together with the Department of Trade and Industry, announced a phased introduction of standards for connecting personal computers.

David Fraser, UK managing director of the software company, Microsoft, suggests that IBM has tried to do too much in networking rather than starting simple and building up to more complex networks later.

## Hardware and software markets

A summary of Market shipments forecast for personal computers in the corporate environment, 1984 to 1989, hardware and software values. The following values are expressed in \$m at constant end-1984 levels, on an "if sold" basis, and rounded to the nearest \$10,000.

Product type	1984	1985	1986	1987	1988	1989	1988-89
<b>HARDWARE</b>							
Stand alone	453.29	570.15	639.35	651.95	619.25	583.71	3,063.41
Networked	41.48	94.58	316.80	323.54	1,701.00	2,780.03	5,765.75
Portable	82.52	152.65	278.52	361.22	487.10	634.91	1,924.41
Total hardware value	577.39	817.35	1,234.67	1,936.52	2,816.35	3,945.65	10,753.57
<b>SOFTWARE</b>							
System	30.09	57.81	131.85	255.20	485.71	808.02	1,778.62
System support	59.69	134.63	274.75	534.08	937.63	1,643.49	3,522.35
Applications	95.51	211.43	463.64	851.55	1,254.46	1,793.56	4,574.64
Total software value	185.29	403.27	876.27	1,670.83	2,687.20	4,245.07	9,876.84
Grand total value	766.68	1,220.65	2,104.94	3,607.35	5,503.55	8,193.72	20,630.21

CP-NET though later the full OSI standard will be adopted paving the way for other operating systems and networking software to be included.

The grouping includes a number of British companies—NCL, Logica, British Telecom among them—but the notable absence of IBM from such an initiative casts doubt on its long term viability.

Even when the problems of connection have been overcome, the application of networking will still have a long way to go.

Both Mr. Bailey from Digital Research and Mr. Fraser from Microsoft see significant administration problems in controlling networked personal computing.

## Problems

"If you believe the unit growth rates, the number of installed micros by the end of this decade will have increased tenfold. Companies are going to be a kind of decision making anarchy if there is no reference data controlled by some responsible party," comments Mr. Bailey. "You can't immediately change the way people work in an office, so there will be a lot of teething problems," he adds.

Mr. Fraser is even more forthright—"Networking really brings home the problems of organisation. If you have a number of people sharing resources, it is going to be crucial that someone is able to understand what is going on—and that means some sort of data processing expert," he says.

So, while networking technology is going to provide a means of bringing together separated personal computer users and give them a novel way of communicating, it is not going to remove many of the obstacles to creating the long-awaited "office of the future."

IT IS estimated that by the end of the decade one-in-three white collar workers in Britain will be using a personal computer. In strict numbers that means around 4m of these machines sitting on people's desks, according to a recent forecast by the International Data Corporation.

In many cases personal computers will be installed in companies that have already made significant investments in larger scale data processing or mainframe computing—a situation which poses a problem.

How can personal computer users link up to corporate information resources and make use of them? The answer, in the past, has been to provide workers with terminals attached to the company mainframe computer. But with the option of the personal computer now available, terminals are not just less convenient—they are a much more expensive one.

At least one technological fix is to connect personal computers directly to the company mainframe and provide software that allows them to "pretend" to be terminals. It sounds simple.

With the computing power being built into modern personal computers, getting them to behave like the relatively simple terminals (often referred to as "dumb terminals") would seem straightforward.

Often the term micro mainframe link is applied to all or any of these components and this has led to some confusion in the market place.

Some large software companies, for example, offer this technology as part of a complete package of their own software, including spreadsheet and word processing on the personal computer and database software on the mainframe.

"When you talk about putting computing on senior management's desks, usability is not a mere luxury—it is a logical requirement," explains Mr. Jeff Roberts of IMI Computing.

"When you are selling large numbers of units you cannot afford large-scale support, because of the low cost of the product. But with mainframe products which might well be addressing the same function, usability is not at the top of the list."

Mr. Roberts' company, a subsidiary of the IMI Group, has attempted to reconcile these two cultures with a linking package called Host Interface Manager (HIM).

"We asked ourselves whether there was a way that we could present a common system image to the personal computer user of what was on the mainframe," adds Mr. Roberts.

In effect, HIM hides the complexities of the mainframe software from the personal computer user by sitting between the two.

## Advantages

Such products are offered by Cincom and Cullinan, but unlike the HIM product they are specific to the companies' own products. This can have advantages. Package Programs, for instance, offers a proprietary link (Smartlink) to connect to a mainframe general ledger package which it also

customised link, but then it is not restricted to something like HIM," says Mr. John Durrell, new product manager at PCL.

"We also sell HIM for general purpose applications so that we can present data to a personal computer package like Lotus 1-2-3."

The U.S. software company, Management Science of America (MSA) started out by offering a dedicated link that only functioned with its packages but has recently developed it out to allow other companies products to connect to it.

"In the early days we did not want to let our competitors use



● Files can be down-loaded from a mainframe to a micro for local processing

our technology," explained Mr. Stuart Walsh, managing director of MSA in Britain.

"But there are no practical limitations to what a micro mainframe link can address.

Users want to be able to interface an number of different products together," he says.

Mr. Ian Durrell, European general manager of Informatics, concurs with this view and suggests that some software companies that sell dedicated links are trapping their customers.

"They are trying to leverage customers into their own products. Even though they are forced to provide hooks to other products, they are trying to influence the user's strategic thinking," he suggests.

"We adopt a more open approach so that ends so we can link virtually any personal computer software to any mainframe software."

Informatics does in fact limit its offering to certain products ("for pragmatic marketing reasons") but Mr. Durrell adds that almost any company could build the appropriate software to incorporate its linking software.

He also points to some interesting trends in the area of software development itself.

"We see micro mainframe linking technology becoming wider to include the programmer as a user, leading to a pro-

grammer workbench," he says.

The computer industry has been slow to make use of its own technology to improve its own productivity.

Other companies have caught on to the value of taking software development away from the expensive mainframe, the cost.

The UK company, Microfocus, has developed a Cobol programmers' workbench to do this and so has the giant French software company, CAP Gemini Sogel.

## Demand

According to a survey conducted recently by Peterborough Software, around half of the large computer users in the UK already have micro mainframe links in place and a third are using personal computers for updating mainframe databases.

"It's clear that a growing number of companies are looking for communications between their micros and their mainframes and we are seeing managers wanting to access information normally restricted to the DP department," notes Mr. David Laking, joint managing director of Peterborough Software.

He also points to some interesting trends in the area of software development itself.

"We see micro mainframe linking technology becoming wider to include the programmer as a user, leading to a pro-

grammer workbench," he says.

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Tel

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## Opening up new horizons

COMPANIES around the world are gingerly getting to grips with novel types of computer software — expert systems — that aim to encapsulate human knowledge in a form that can be made available to relatively untrained people.

Research into expert systems, which started in the U.S. academic institutes in the 1970s, was driven by two factors.

- First, scientists wanted to increase the ease with which information can be fed into and extracted from computers.
- Second, researchers felt there could be a commercial need for data bases containing expert knowledge that can be easily tapped by ordinary people.

The expert systems produced by centres such as Stanford University in California and the University of Pittsburgh contain hundreds, if not thousands, of rules in subjects such as oil-field prospecting and medical diagnostics.

The rules—of the general form "If factor X applies, then there is a Y per cent chance that condition Z is true"—are inserted into a computer by a specialist in a particular area using a special programming language.

Thanks to the way that the software is structured, a relatively unskilled person can then interrogate the computer to obtain insights into the specialist knowledge contained in the machine.

## Guidance

Rather than give the person specific answers to questions, the computer would guide him or her to conclusions, perhaps asking questions to obtain further information about a particular area.

In the past couple of years, the pace of development in expert systems has quickened. This is both as a result of new work in software techniques—funded in some cases by national programmes such as Britain's Alvey project or the Japanese Government's work in fifth-generation computing—and of success in adapting expert systems to run on small, cheap microcomputers as opposed to big and expensive mainframes.

In the business world, expert systems could in theory be one of the best of applications. For instance, the knowledge of a highly trained process engineer could be put into a computer for use either in training or for operational applications in the control of a chemical or oil plant.

Planners and office managers could consult expert systems for advice on matters such as legal

more bullish view. He says: "Researchers still have to crack some technical problems over expert systems for example to make them operate in real time (to give instant answers to questions) and to make them capable of handling very large amounts of data."

"But their long-term potential will be tremendous. In future, using the services of a professional who doesn't use an expert system to advise him will be like going to a dentist who doesn't use an anaesthetic."

DEC, the big U.S. computer company, is probably further ahead than any commercial organisation in using expert systems. With researchers from Carnegie Mellon University in Pittsburgh, it developed a system called XCON (formerly called RI) to help in the construction of VAX computers.

With the system, workers in a factory can gain advice on how to fit components such as electrical devices inside a computer to suit the needs of a specific customer. The system also gives them a check list to make sure all the manufacturing tasks have been completed.

DEC is developing further types of expert systems to help in areas such as management and other manufacturing jobs.

There have been other pointers to the future use of expert systems:

• Elf, the French company, is investigating expert systems for jobs such as maintenance of oil platforms. In theory, computers could receive data routinely from sensors on the platform and process the information using expert systems to warn of faults.

• Brontoil, another oil company, is interested in expert systems as a tool to help in the deciphering of complex geophysical data, for example from seismographs.

It is working in this with Oilfield Expert Systems, a small company based in Burgess Hill, Sussex.

Racial is investigating the techniques as an aid in the understanding of masses of coded signals, derived for instance from radar or other military equipment. The Ministry of Defence's Admiralty Research Establishment in Portsmouth, as well as research centres run by the U.S. Department of Defense, is also interested in this application of expert systems.

• Unilever is working on expert systems in its research laboratories for applications in process plants. They could help in the diagnosis of faults in, say, factories that turn out washing powder. In such plants, small discrepancies in, for instance, the amount of chemical fed through a valve may disrupt the whole process though the exact nature of the fault may be difficult to spot.

• Researchers at St Thomas's medical school in London are working on an expert system that could help doctors to control diseases such as "diabetes". The system would contain hundreds of rules related to the disease, for example linking symptoms with specific guidelines on treatment. According to the researchers, the systems could be used by general practitioners with no special knowledge of diabetes to advise patients suffering from the condition.

• Wolverhampton metropolitan council is attempting to use an expert system to advise junior staff on how to allocate people to council houses. The system would contain knowledge of an experienced housing official as well as sets of rules concerning the basis on which people are eligible for accommodation from the council's housing stock.

• Two British companies, Expert Systems International of Oxford and Helix Software of London, are working on a novel type of software that would advise on financial matters. With the system, banks and

other financial institutions would gain advice on, say, how to unravel particularly abstract sets of company accounts.

Companies selling various forms of expert systems include, in Britain, Logic Programming Associates and Logic Based Systems, both formed by academics from London's Imperial College, and Expertech, based in Slough.

Teknowledge and Quintus, both of California, and Programming Logix Systems, based in Connecticut, are among the small organisations selling expert systems in the U.S.

These companies normally sell their products in the form of "expert shells" — in which the customer has to spend up to several months putting information into the system in the particular subject in which he is interested. Such shells sell for anything between a few hundred pounds to (in the case of one product from Teknowledge) \$50,000. They can often run on small computers such as the IBM PC or an Apple machine.

## Languages

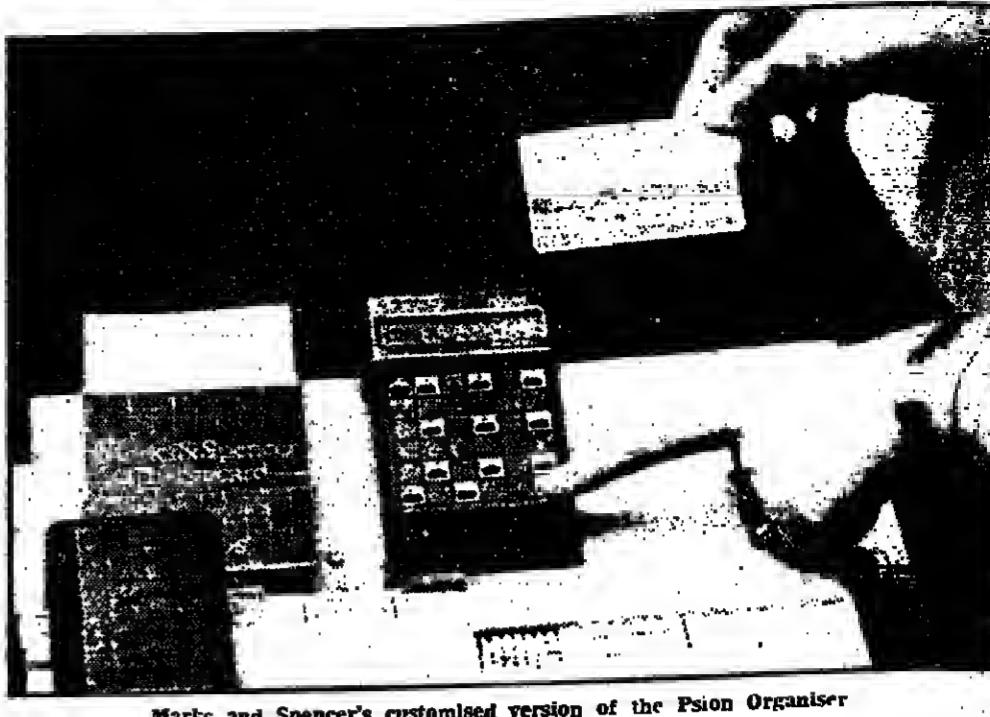
Alternatively, the companies sell a special programming language (in the form of a couple of discs and a manual) that are especially useful for the construction of expert systems.

• That leaves the customer with the job of building his own system from scratch, rather as a householder constructs an item of furniture using a do-it-yourself kit. The most popular languages for this job are forms of Prolog or Lisp and they sell typically for a few hundred pounds.

• Logic Programming Associates, set up by two Imperial College researchers in 1980, has sold about 4,000 copies of its own form of Prolog, called Micro-Prolog. It reckons about 1,000 have been for "serious" use either in companies or educational establishments — the rest have been bought mainly by hobbyists.

Mr Jonathan Briggs, manager of the five-person company, says that purchasers have included GEC, British Telecom, British Aerospace, Logica, IIT, Siemens, Standard Oil and AT and T.

"Few companies are using their systems in a routine way. But the technology is not more than about 18 months old in terms of it being applicable for use on small computers. We think we are about six months away from seeing the first real applications."



Marks and Spencer's customised version of the Psion Organiser

## USES FOR POCKET-SIZE MACHINES

THERE IS no shortage of companies trying to capture the portable computer market.

The industry has seen everything including transportable, luggable, lap-held to plain old portable.

One company, the British software group, Psion, has carved a niche with a pocket computer with a performance that falls somewhere between a very sophisticated scientific calculator and a lap-held computer.

Psion, for example, have just started using the Organiser as a means of providing a quick and cheap system of checking its new store charge card at the till. The Organiser is programmed with a list of void cards from a 16-bit "datapak" which can store the numbers of up to 8,000 cards.

Wessex Publishing is selling a special version of the Organiser which can be used

by builders and quantity surveyors for cost-estimating on a building site. A surveyor, for example, can enter information into the Organiser the dimensions of an area to be concreted and the type of concrete and it will calculate and store the result.

Another application developed by Psion is helping doctors to prescribe drugs. The Organiser can store details on 280 drugs under 750 brand names with details of dosage and side effects. Quite whether this will prove as useful as the much more comprehensive monthly booklet, MIMS—no bigger than the Organiser—is doubtful. But Psion are also aiming to bring out specialist medical applications, devoted to anaesthetics, cancer chemotherapy and endocrinology.

JASON CRISP

## COMMUNICATIONS CONFERENCE

THE ROLE of the personal computer in a large business will be one of the topics in a Financial Times conference on the theme, "Communications in the UK — the challenge of choice."

The two-day London conference will take place at the Hotel Inter-Continental on Wednesday and Thursday, April 24 and 25, 1985. The event coincides with the Communications Exhibition at London's Earls Court.

Other topics at the FT conference will include:

- The new UK telecommunications environment.
- Planning for information technology: how to decide when to scrap old products and systems; and when, in the product life-cycle, to buy.

Wider choices in communications and information technology.

- The future growth in value-added systems and services

markets.

- Network services market: the future challenges.
- Preparing for the electronic market.

More details of the conference, which is designed for corporate equipment users, are available from the FT Conference Organisation at Minerva House, Arthur Street, London, EC4R 9AX (Tel: 01-621 1476, 24-hour answering service; telex 27437 FTCONF G).

## FOUR REASONS WHY SORD IS THE FASTEST GROWING COMPUTER COMPANY IN JAPAN.

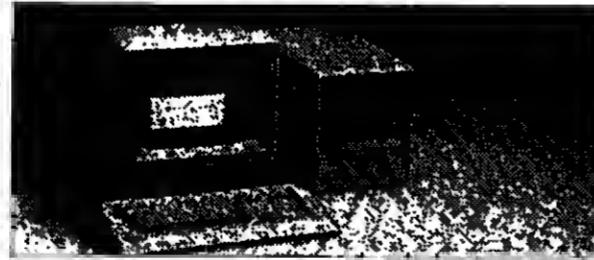
## 1 M68 8-bit/16-bit desktop system.

Offers multiple operating systems and a CPU design which enables it to run both 16-bit and 8-bit software, including FIM COBOL, BASIC, and all CP/M-based programs. Also supports Word Processor II and PIPS, SORD's unique Pan Information Processing System, which integrates spreadsheet, data base, graphics, text processing and programming functions into one system.



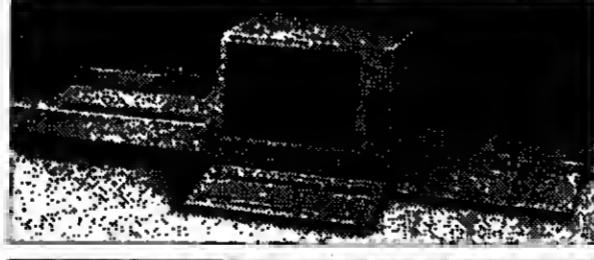
## 2 M343SX 16-bit multi-user system.

Features multiple operating systems (including multi-user Concurrent DOS 3.1 and MS-DOS version 2.0), IBM terminal emulation and full language support (FORTRAN, LEVEL-II COBOL™, MBASIC, PASCAL, C, and Assembler). Also features PIPS.



## 3 "CAD-BRAIN". Turnkey CAD Package.

Low-cost/high-powered hardware/software package that brings computer aided design within the financial reach of the independent designer. Also suitable, of course, for large firms. Features high-resolution 1024 x 760 dot color monitor, a complete range of built-in design elements ("primitives"), and full graphics features.



## 4 M243EX 8-bit multi-user system.

The cost-effective way to bring office automation to your whole staff. Features PIPS, BASIC, ANSI-74 COBOL, FORTRAN-80 and assembler. An excellent workstation for use in SORD's local area network (S-NET).



**SORD**

Japan's fastest growing computer company.

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THE BUSINESS world seems to be divided into two kinds of people. Those who find it natural and attractive to use the kind of professional personal computers that are available today—and those who don't.

The latter are in the majority. Yet, the industry argues, the personal computer will only fulfill its true potential when the "non-computing majority" learns to make use of what it has to offer. So, the argument runs, ways must be found to make personal computers more attractive to non-computing people, to improve the man-machine interface—especially as the industry wants to sell ever greater volumes of its machines.

In truth, but at a different level, there is every bit as much need to make the operation of computers simple for the computing specialist. This is why, in the interests of productivity, there is so much investment at present in "software engineering," the development of hardware and software which makes the programmer's job more effective.

One example is the popularity of the Unix operating system; it is by no means the best, but it does have a number of features much liked by the professional software developer.

For ordinary mortals, however, who find personal computers difficult, even alien, the problem is quite different.

There have been some attempts to make the hardware itself more amenable—the desktop "mouse" pioneered by Xerox, the touch screen popularised by Hewlett-Packard and the voice command system which ACT is building into its business computers, are typical examples.

For most suppliers, however, specialised software offers much greater potential for significant improvements in user friendliness.

Leaving aside dedicated applications programs—a specialised stockbrokers' system—for example, there are five types of software product that offer increased productivity in the office.

These are word processing, spread sheet, graphics, electronic filing and communications.

**Viewpoint**

Mr William Gates, chairman of Microsoft, identified the problem at a Financial Times conference last year: "People are sitting down and using one of these productivity tools because they have decided that working with information in electronic form means they can do more, see more and try things out in different ways."

"They are forced to accept some restrictions. They have to give commands to the computer in a very low-level fashion. It is up to you and your computing power to translate the idea of what you want to do—generally a high-level activity, like updating a sales report—into low-level commands the computer can accept."

Mr Gates went on: "We are making improvements in how

these low-level commands work. Future software will change the types of commands that you give to the computer so you will be able to work in a much higher-level fashion than you do today."

Mr Gates described these new kinds of computer programs as "softer software." He said: "In a sense, you could call this building common sense into a computer. What the machine should do is anticipate common actions."

He was talking basically about building a level of pattern recognition and reasoning into the computer. If, for example, a user always consults two files in sequence, the computer should be able to recognise that fact and have the second file ready for retrieval when required.

## Pitfalls

Nobody is pretending that developing software will be easy. The road to easy-to-use personal computers is seemingly full of pitfalls.

Last month a shiver went through the personal computer industry when Lotus Development Corporation admitted that its "Jazz" integrated software package for Apple's innovative Macintosh computer would be delayed.

It was to have been released at the beginning of April, but now it seems unlikely to appear before the middle of the year.

The significance of this delay lies in the fact that Lotus is the originator of the best-selling "1-2-3" package which has contributed greatly to the success of the IBM PC.

"1-2-3" was the first of what are known as "integrated" packages, single packages containing a number of programs which can be run one after the other without changing disks and which, more critically, share common sets of data.

"1-2-3" comprised a spreadsheet, a database program and graphics software.

It was an instantaneous and massive success and spawned a whole raft of imitators and "me-too" products.

"Jazz," which combines word processing, worksheet analysis, database management, communications and business graphics, is a strategically important product both for Lotus and for Apple.

The personal computing world

basically follows one of two

philosophies: the "traditional" approach represented by the IBM/PC and its MS/DOS operating system which best suits the computer literate, and the Apple Macintosh approach where pictures on the screen help the user to carry out computing tasks.

For the occasional user and those who find computers very unfriendly, it seems to be an approach that works. Dennis Longley and Michael Shain in the 1985 *Microcomputer Users' Handbook* (Macmillan Reference Paperbacks), say: "Apple's claim that a new user can be performing tasks within minutes, rather than hours, is valid."

But they complain: "There appears to be a considerable processing overhead inherent in the generation of the graphics and the menus."

All this extreme friendliness means that the user spends a lot of time waiting for the system to execute its instructions."

For Apple, however, Lotus' Jazz software was seen as a new chance to break into the business personal computer market with Macintosh, where it has not yet achieved significant success.

In Europe, Apple is regarded as a supplier of business computers—not its dominant position in France, for example—and, as such, direct competition for IBM. In the U.S., however, it is seen much more as a high-end home computer supplier, and its penetration of the corporate computer sector is substantially less than IBM's.

So the delay in the introduction of Jazz is a considerable setback for Apple. It is also a setback for Lotus, the first time it has failed to ship a promised product on time. The company has also failed to achieve quite the rapturous reception for its new integrated package, Symphony, that greeted 1-2-3.

Symphony combines word processing, word processing, graphics, database management and communications capabilities. With present computing technology, it is probably at the limit of integration. Mr Mitchell Kapor, chairman of Lotus, says:

"If Lotus gave the impression that Symphony was a panacea for all ills, then that was wrong."